ONKYO SERVICE MANUAL

DIGITAL AUDIO TAPE DECK

MODEL DT-9000

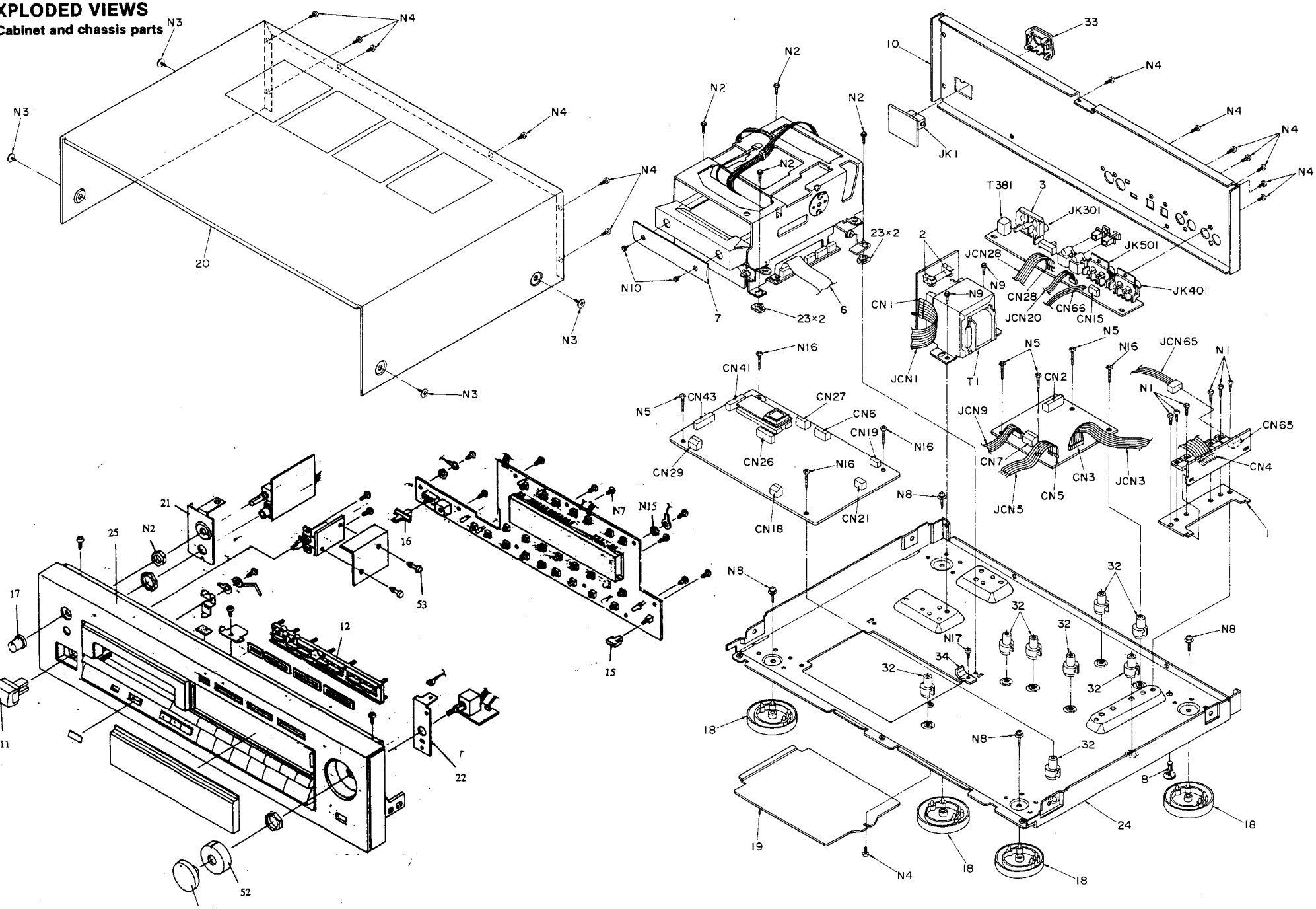
SPECIFICATIONS

Signal Format	
Tape Recording System:	Rotating head system DAT
Sampling Frequencies:	Recording: 48kHz, 44.1kHz, 32kHz (automatic digital input switching) Playback: 48kHz, 44.1kHz, 32kHz (automatic switching)
Number of Quantization Bits:	16-bit linear
Number of channels:	2-channel (stereo)
Audio (Analog recording and playback)	
Frequency Response:	2Hz – 22.000Hz
Dynamic Range:	90dB or more
S/N Ratio:	90dB or more
Total Harmonic Distortion:	0.008% or lower
Wow & Flutter:	Unmeasurable
Input/Output jacks	
Analog Input jacks	
Lowest Input Level:	140mV
Input Impedance:	47k ohms
Analog Output jacks	
Full-Scale Output Level:	2V
Output Impedance:	600 ohms
Headphone Output:	Max. 25mW + 25mW/32 ohms (most suitable impedance is 8 to 600 ohms)
Digital Input Jacks:	Coaxial/75 ohms, Optical (switch equipped)
Digital Output:	Coaxial/75 ohms, Optical (parallel output)
Mechanism	
Head:	Amorphous/ferrite composite
Cylinder Diameter:	30mm, 1-3/16"
Cylinder Rotational Speed:	2000 r.p.m. (during recording and playback)
Tape Speed:	8.15mm (5/16") /sec., 12.225mm (1/2") /sec. (automatic switching)
Search Speed:	Max. 400 times normal
High-Speed Rewind Time:	About 27 seconds (120 minute tape)
General	
Power:	AC 120V, 60Hz
Power Consumption:	27W
External Dimensions:	435 (W) x 122 (H) x 339 (D)mm 17-1/8" x 4-13/16" x 13-3/8"
Weight:	5.7kg, 12.6 lbs.

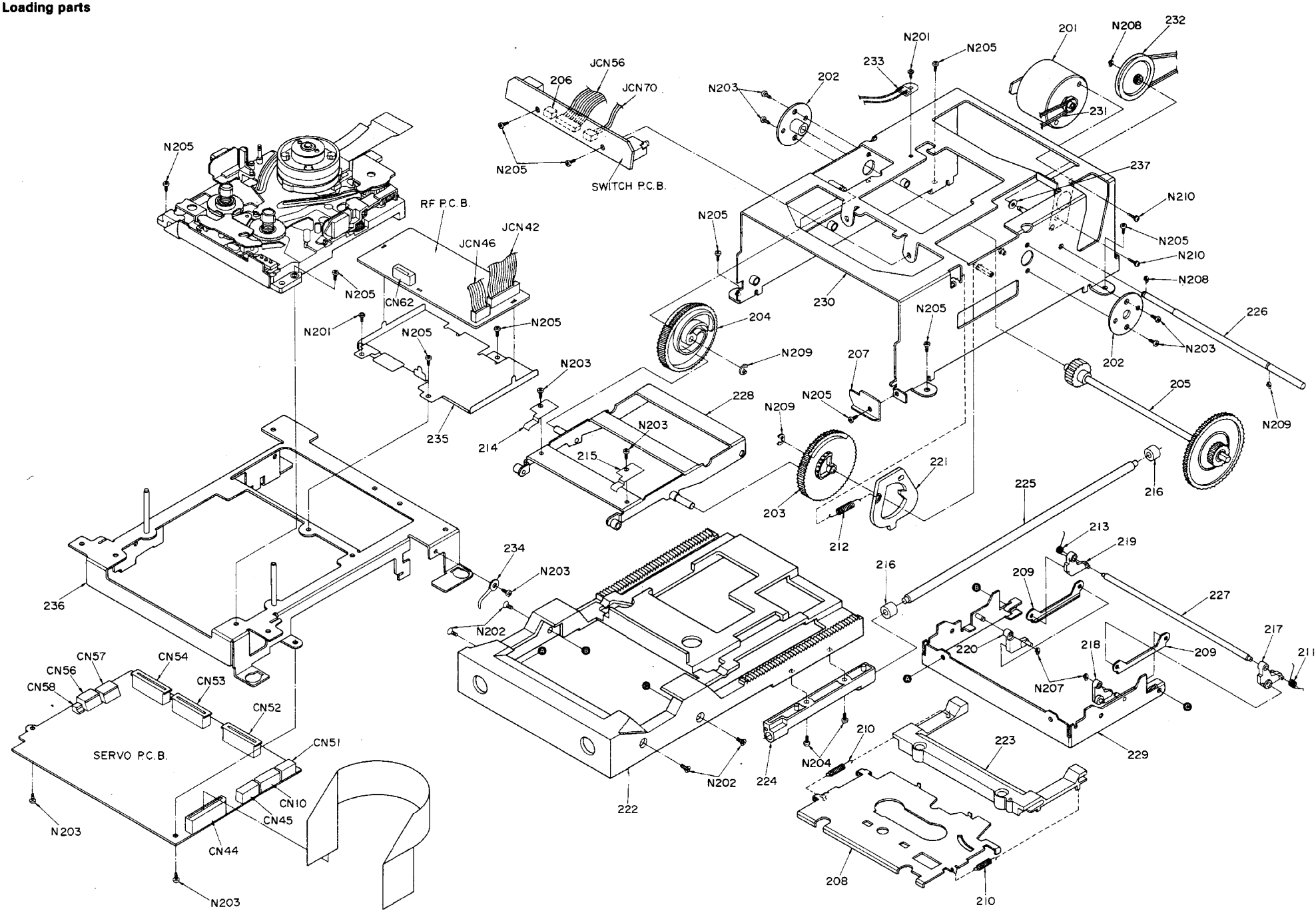
Specifications and external appearance are subject to change without notice because of product improvements.

EXPLODED VIEWS

- **Cabinet and chassis parts**

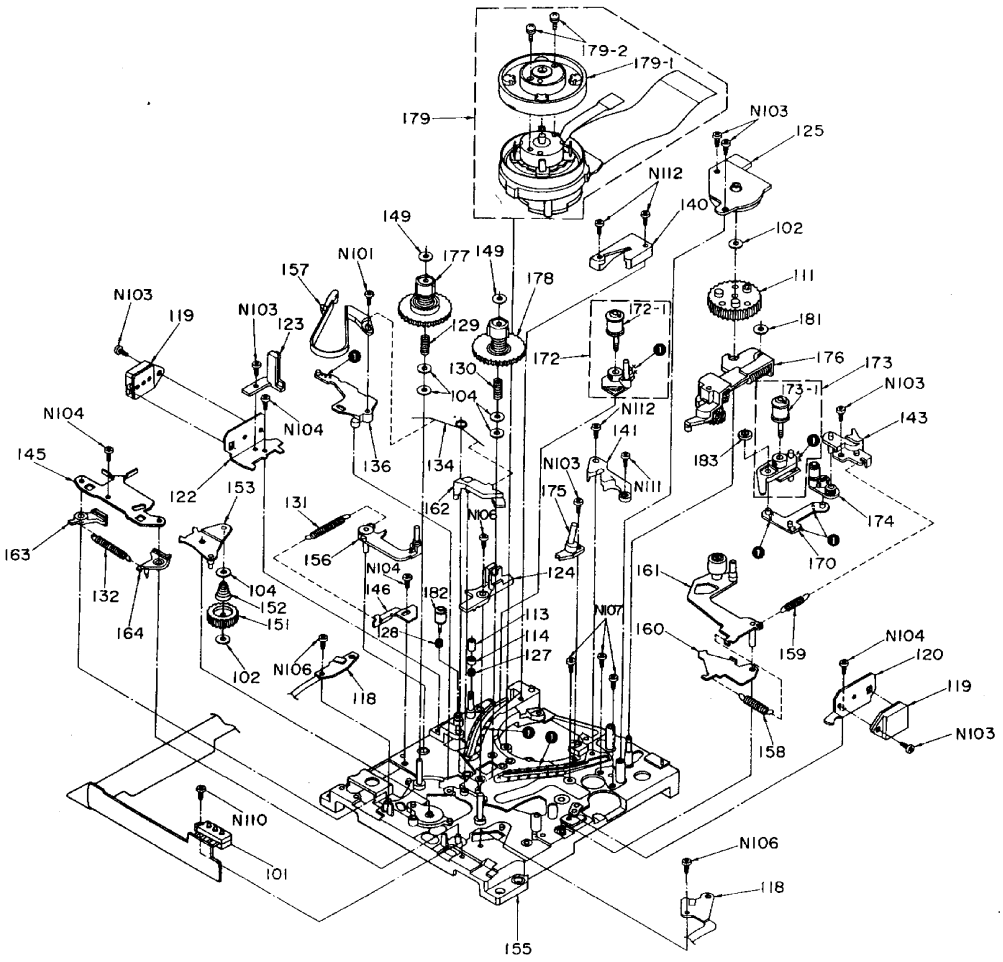


• **Loading parts**

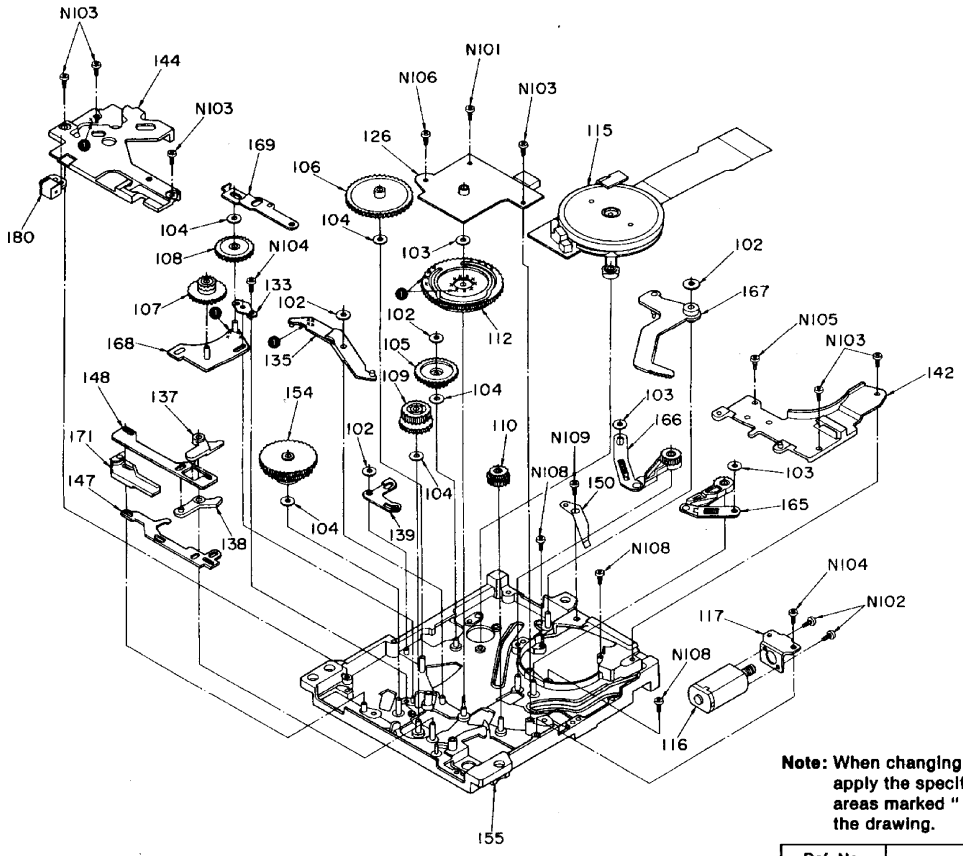


• **Mechanism parts (RAA1001)**

(Top view)



(Bottom view)



Note: When changing mechanism parts, apply the specified grease to the areas marked "× ×" as shown in the drawing.

Ref. No.	Part No.
❶	RZZ0L05

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
101	24714009	Cassette switch	157	24715036	Tension band ass'y
102	24715013	Washer	158	24710035	Pin pressure spring
103	24175014	Washer	159	24710036	Pinch roller spring
104	24175015	Washer	160	24704011	Pin pressure spring
105	24708008	Main gear A	161	24715037	Pinch arm ass'y
106	24708009	Main gear B	162	24715038	BT lever ass'y
107	24708010	Idler gear P	163	24715039	Supply brake ass'y
108	24708011	Idler gear F	164	24715040	Takeup brake ass'y
109	24708012	Counter gear	165	24715041	Supply load arm
110	24708013	Mode repeating gear	166	24715042	Takeup load arm
111	24708014	Load cam	167	24715043	Load lever
112	24708015	Mode cam	168	24715044	P.F.idler ass'y
113	24706010	Fixed post	169	24715045	Lever,P.F. selection
114	24706011	Fixed post flange	170	24715046	Guide link ass'y
115	24702011	Capstan unit	171	24715047	Plunger link ass'y
116	24702012	Mode motor ass'y(M701)	172	24715048	Supply post roller ass'y
117	24715016	Holder,mode motor	173	24715049	Takeup post roller ass'y
118	24714010	Interface p.c.b.	174	24715050	Takeup guide roller
119	24714011	Begin/End detector sensor ass'y	175	24715051	Takeup inclind base ass'y
120	24715017	Begin detector bracket	176	24715052	Load holder ass'y
122	24715018	End detector bracket	177	24715053	Supply reel ass'y
123	24715019	Lead opener	178	24715054	Takeup reel ass'y
124	24714012	Begin/End detector LED ass'y	179	24701006	Cylinder unit
125	24714013	Load switch ass'y	180	24714015	Plunger
126	24714014	Mode switch ass'y	N101	24710037	Screw
127	24710027	Spring,fixed post	N102	24710038	Screw
128	24710028	Spring,guide roller	N103	24710039	Screw
129	24710029	Spring,supply reel	N104	24710040	Screw
130	24710030	Spring,take-up reel	N105	24710041	Screw
131	24710031	Spring,tension	N106	24710042	Screw
132	24710032	Spring,brake	N107	24710043	Screw
133	24715020	Bracket	N108	24710044	Screw
134	24710033	Spring BT	N109	24710045	Screw
135	24704006	Lever,pinch			<Loading parts>
136	24704007	Lever,tension	201	24702013	Tray motor ass'y
137	24704008	Lever,supply brake	202	27301404	Holder,gear shaft
138	24704009	Lever,takeup brake	203	27301405	Main gear
139	24704010	Lever,load selector	204	27301406	Main gear
140	24715021	Supply stopper	205	27301407	Gear shaft ass'y
141	24715022	Takeup stopper	206	2009990167	Connector(CN72)
142	24715023	Load guide holder	207	27141460	Shaft frame
143	24715024	Guide arm stopper	208	27141461	Bracket,cassette holder
144	24715025	Mode guide plate	209	27141462	Holder arm
145	24715026	Idler guide	210	27180468	Spring
146	24715027	Tension spring hook	211	27180469	Spring
147	24715028	Supply brake drive plate	212	27180470	Spring
148	24175029	Tension brake drive plate	213	27180471	Spring
149	24175030	Washer	214	27180472	Bracket
150	24705031	Ground bracket	215	27180473	Bracket
151	24708016	Idler gear	216	28141085	Rubber
152	24710034	Idler spring	217	27301408	Holder,shaft
153	24715032	Idler arm ass'y	218	27301409	Holder
154	24715033	Drive gear	219	27301410	Holder,shaft
155	24715034	Chassis unit	220	27301411	Holder
156	24715035	Tension arm ass'y	221	27301412	Holder,main gear

REF.NO.	PART NO.	DESCRIPTION
222	27301413	Tray
223	27301414	Cassette holder
224	27301415	Shaft bracket
225	27260303	Shaft
226	27260304	Shaft
227	27260305	Shaft
228	27141463	Sub frame
229	27141464	Cassette holder
230	27141465	Frame
231	27301417	Belt
232	27301416	Pulley gear
233	4000125	DEW sensor
234	27255008	Ground terminal
235	27141466	Shield plate
236	27141467	Mechanism frame
S751,S752	25065433	Open/Close switch
N201	82142003	2P+3F(BC),Pan head screw
N202	801462	Screw
N203	838430088	3TTB+8B(BC),Screw
N204	801463	Screw
N205	8213010	3P+10FN(BC),Screw
N206	838430068	3TTB+6B(BC),Screw
N207	8930151S	ES-1.5S,Washer
N208	8930201S	ES-2S,Washer
N209	8930301S	ES-3S,Washer
N210	801464	Screw

REF.NO.	PART NO.	DESCRIPTION	PART NAME	REF.NO.	PART NO.	DESCRIPTION	PART NAME
U1	24505286	DG-AS-1	Main pc board ass'y	21	27141458	(HP)	Bracket
U2	24505287	DG-AS-2	Input/output terminal pc board ass'y	22	27141457	(REC)	Bracket
U3	24505288	SS-AS-1	Servo pc board ass'y	23	24506972		Floating rubber
U4	24505291	RF-AS-1	RF pc board ass'y	24	27171439		Bottom panel
U5	24505294	DIS-AS-1	Operation pc board ass'y	25	27211294		Front panel ass'y
U6	24505292	AF-AS-1	Headphpne terminal pc board ass'y	32	27190823	(PCB)	Holder
U7	24505293	AF-AS-2	Rec. level pc board ass'y	33	27190824	(Socket)	Holder
U8	24505295	PS-AS-1	Power supply (1) pc board ass'y	51	28324265		Rec.level knob L
U9	24505296	PS-AS-2	Power supply (2) pc board ass'y	52	28324266		Rec. level knob R
U10	24505301	PS-AS-3	Power transformer pc board ass'y	N1	838430088	3TTB+8B(BC)	Self-tapping screw
U11	24505298	PS-AS-4	Power switch pc board ass'y	N2	801454		Special screw
U12	24505299	PS-AS-5	AC-IN terminal pc board ass'y	N3	801455		Special screw
U13	24505300	ETC-AS-1	RI terminal pc board ass'y	N4	801230	3STS+8BQ(BC)	Self-tapping screw
1	27160275		Radiator	N5	838130168	3TTB+16B	Self-tapping screw
3	27301401		Ground plate	N6	831430100	3TTB+10P(BC)	Self-tapping screw
	27141454	(FL)	bracket	N7	838130080	3TTB+8P	Self-tapping screw
7	27211293		Door	N8	834430068	3TTS+6B(BC)	Self-tapping screw
10	27121415		Back panel	N9	831430088	3TTW+8B(BC)	Self-tapping screw
11	28323987-1		Power knob	N10	801456		Special screw
12	28324261		Slide knob	N11	801459		Special nut
15	28324262		Input knob	N12	801460		Special nut
16	28324263		Timer knob	N14	801461		Special nut
17	28324264		Headphone knob	N15	87313006	M-3B	Washer
18	27175259		Leg	N16	801458		Special screw
19	27141456	(Bottom panel)	Bracket	N17	801457		Special screw
20	28184477		Top cover				

PACKING MATERIALS AND ACCESSARY

PART NO.	DESCRIPTION
29052186	Master carton box
29091450	Pad F
29091451	Pad B
29100118	Protection sheet
29341530	Instruction manual
29365019	Warranty card
29358002G	Service station list
2010231	Power supply cord
3010180	Two batteries
2010200	RC cord
2010166	Connection cord

PRINTED CIRCUIT BOARD-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
IC11	222780120	7812
IC12	222780050	7805
IC13	222790205	79M20
IC14	222790203	79L20
IC15	222780125MIT	78M12L
IC16	222790125MIT	79M12L
IC101	22240451R0	AN7030S
IC102	22240452R0	AN7035SC
IC201	22240441R0	MN6742SDR
IC202	22240442R0	MN53020SDQ
IC203	22240443R0	AN8320NFA
IC204,IC205	22240444	AN3841SR
IC206	22240450	M5228FP
IC207,IC360	222740045R0MA	74HC04
IC208	22240445R0MA	MN74HC4066
IC209	222780053R0MA	78L05
IC271	22240446R0	MN17541SDN
IC272	22240447R0	AN6607NS
IC273	22240448R0	AN1339S
IC274	22240239	TA7291S
IC275	22240449R0	TC4S81FTX
IC301	22240432	MN188161SDS4
IC302	22240433	MN1281R-TA
IC351	22240423R3	MN6624
IC352	22240437R0	SRM20256LM10
IC354	222755	74HCU04
IC355	24120027	TORX174
IC356	24120035	TOTX174
IC357	222966	M5238L
IC358,IC359	222740005R0MA	74HC00
IC361	222740006R0MA	74HC04
IC362	222740005R0MA	74HC00
IC363	222742535R0MA	74HC253
IC401,IC402	222836	M5219L
IC403	222973	M5220L
IC405,IC406	22240438R0	MN6460
IC407	22240440	AN78N05
IC411	222836	M5219L
IC501	22240439R0	MN6470
IC511-IC514	222836	M5219L
IC515,IC516	222966	M5238L
IC551,IC552	222652	M5218L
IC601	22240422R3	M50754-164FP
IC602	22240455R0	AN6873S
IC603	222740045R0MA	74HC04
	FL tube	
FL601	212094	BG849GK
	Transistors	
Q102-Q105	2214000R0	UN5216
Q106,Q107	2214010R0	2SC3937
Q109	2214000R0	UN5216
Q201	2214024R0	2SB956-R
Q271	22140350R0	2SD1280-S

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q272	2214090R1	DTA123JK
Q274	2214044R0	2SB709-R
Q275	2214070R1	DTC124EK
Q301,Q351	2213940R0	XN1212
Q311-Q313	2213973	2SC3315-C
Q314,Q315	2213950R0	XN1112
Q352	2213981	2SA1309-S
Q353	2213994	2SC1047-D
Q401	2213960	UN4124
Q402	2213940R0	XN1212
Q501	226036	UN4112
Q502,Q508	2213950R0	XN1112
Q503,Q504	2213973	2SC3315-C
Q505,Q506	2201893,	2SC3311-Q,
Q511	2201894 or	2SC3311-R or
	22018935	2SC3311-S
Q507	2213960	UN4124
Q509,Q510	2213973	2SC3315-C
Q512	2201903,	2SA1309-Q,
	2213982 or	2SA1309-R or
	2213983	2SA1309-S
Q551-Q554	2213814,5,6	2SD1450-R,S,T
Q601-Q605	2213510	DTA114ES
	Diodes	
D11-D15	223192 !	1SR35200TB
D16,D18	22380002 !	GP20DLR
D17,D19	223192 !	1SR35200TB
D21	224450511	MTZ5.1A
D201	223199R0	MA701
D203	223200	1N4606
D271	223124	1S2473
D351	223198	SVC321SPA-A5
D381-D384	223163	1SS133
D401,D507	224990032	MA4033M
D501	223163	1SS133
D503-D506	223163	1SS133
D509,D510	223163	1SS133
D611-D628	223163	1SS133
D630-D637	223163	1SS133
D642,D643	223163	1SS133
D702	224990042	MA4056M
D721,D722	223163	1SS133
	L.E.Ds	
D601-D603	225263	LN28RCPP-JF
D605	225264	LN31GPH-JF2
D607,D608	225265	LN29RRH-JF1
	Coils	
L1,L2	231200 !	SLQX400-D
L101	231194R1	ELJFA470KF
L104	231193R1	ELJFA180KF
L106	231195R1	ELJFA101KF
L108	231197	RLQZB471KTD
L109,L110	231193R1	ELJFA180KF

CIRCUIT NO.	PART NO.	DESCRIPTION
	Coils	
L120,L203	231196	RLQZB101KT-D
L202	231199	RLM9R001-Z
L351	233400M022	NCH-2225
L352	231190	NSO-4054
L381	231198	RLQZB470KT-D
	Ferrite beads	
L382-L384	230909	EXCELDR35V
L481,L482	230909	EXCELDR35V
L550-L552	230909	EXCELDR35V
L571,L572	230909	EXCELDR35V
	Transformers	
T1	2300653 !	NPT-1108D,Power
T381	232154	NSRF-1055,Pulse
	Crystals	
X201	3010178	C8M00J01
X351	3010174	AF5115CF
X352	3010175	AF6630CE
X353	3010176	AF3817CF
X354	3010177	AF3781CH
	Ceramic oscillators	
X202,X301	3010154	CST8.00MT
X601	3010149	CST6.00MGW
	Ceramic capacitors	
C19	330236829	6800pF,100V
C604,C605	3300009	ECBT1E103ZF5
C652,C654	3300010	ECBT1H102KB5
C656,C702	3300010	ECBT1H102KB5
C658,C660	3300009	ECBT1E103ZF5
C694,C703	3300009	ECBT1E103ZF5
C721,C751	3300009	ECBT1E103ZF5
C701	3300011	ECBT1H471KB5
	Elect. capacitors	
C110	355722219	220MF,6.3V
C129,C130	355722209	22MF,6.3V
C20,C22	3500141	ECEA1EPZ332E
C201,C230	355724709	47MF,6.3V
C21,C23	354741009	10MF,16V
C212,C213	355742209	22MF,16V
C229	355722219	220MF,6.3V
C232	355742209	22MF,16V
C234	355744709	47MF,16V
C24	354756829	6800MF,25V
C25,C27	354741009	10MF,16V
C26	354744729	4700MF,16V
C270,C602	355724709	47MF,6.3V
C28	354782219	220MF,50V
C29	354763309	33MF,35V
C32	354784709	47MF,50V
C357	354723309	33MF,6.3V
C367,C368	354723309	33MF,6.3V
C369	354722219	220MF,6.3V
C372,C374	354723309	33MF,6.3V
C382	354721019	100MF,6.3V
C411,C412	3500135	ECEA1CBZ330B

CIRCUIT NO.	PART NO.	DESCRIPTION
	Elect. capacitors	
C419,C420	3500136	ECEA1CPZ101B
C423,C424	3500136	ECEA1CPZ101B
C431,C432	3500137	ECEA0JPZ221B
C437,C438	354780479	4.7MF,50V
C439-C441	354742209	22MF,16V
C443,C444	354742209	22MF,16V
C451-C454	354722219	220MF,6.3V
C455,C456	3500137	ECEA0JPZ221B
C483,C484	3500135	ECEA1CBZ330B
C485,C486	3500136	ECEA1CPZ101B
C491,C492	3500135	ECEA1CBZ330B
C501,C503	354724719	470MF,6.3V
C507,C508	354741019	100MF,16V
C511,C512	3500138	ECEA0JPZ331B
C515-C518	3500136	ECEA1CPZ101B
C527,C528	350135	ECEA1CBZ330B
C537,C538	350135	ECEA1CBZ330B
C561,C562	354742209	22MF,16V
C563,C564	354741009	10MF,16V
C603,C657	355724709	47MF,6.3V
C655,C659	355761009	10MF,35V
	IS capacitor	
C1	3500065A !	DE7150FZ103PAC400V/125V
	Mylar capacitors	
C413,C414	3700019	ECHR1H681JZ3
C415,C416	3700020	ECHR1H182JZ3
C417,C418	3700014	ECHR1H101JZ3
C421,C422	3700014	ECHR1H101JZ3
C481,C482	3700017	ECHR1H102JZ3
C521,C522	3700016	ECHR1H331JZ3
C525,C526	3700016	ECHR1H331JZ3
C529,C530	3700018	ECHR1H392JZ3
C531,C532	3700021	ECHR1H151JZ3
C533,C534	3700018	ECHR1H392JZ3
C535,C536	37000136	ECEA1CPZ101B
C571,C572	3700017	ECHR1H102JZ3
	Plastic capacitors	
C224	375526834	0.068MF,5%,50V
C381,C388	375521044	0.1MF,5%,50V
C384	375521034	0.01MF,5%,50V
C445,C446	375521044	0.1MF,5%,50V
C539,C540	375521034	0.01MF,5%,50V
C571,C572	3700017	ECHR1H102JZ3
	Metal oxide film resistors	
R13,R14	441625604	56Ohm,1W
R237,R245	441520334	3.3Ohm,1/2W
R274	441528294	0.82Ohm,1/2W
	Semi-fixed resistors	
VR104,VR105	5225118	EVNDXAA00B53
VR106	5225117	EVNDXAA00B14
VR107,VR108	5225116	EVNDXAA00B13
VR201	5225119	EVNDXAA00B54
VR271	5221026	EVNDCAA03B54
VR451,VR452	5225116	EVNDXAA00B13

CIRCUIT NO.	PART NO.		DESCRIPTION
	Variable resistors		
VR401	5104287		RRV18B01A14A
VR551	5104286		EVV57A022A14
	Relay		
RLY501	25065431		AG80239
	Push switches		
S1	25035624	!	ESB8249V
S602	25035630		ESB64801
S611-S621	25035629		EVQQTG05R
S622-S628	25035629		EVQQTG05R
S630-S635	25035629		EVQQTG05R
	Slide switches		
S381	25065430		ESD1521201
S601	25065432		ESD1511301
	Plugs		
CN10	25055525		NPLG-6P500
CN15,CN19	25055523		NPLG-4P498
CN26	25055530		NPLG-8P353
CN41	25055532		NPLG-10P355
CN45	25055524		NPLG-5P499
CN51	25055522		NPLG-3P497
CN56	25055575		RJP4G28ZA
CN57	25055576		RJP6G28ZA
CN58	25055577		RJT036W002
	Remote control sensor		
RM601	24130003		GP1U50XS
	RI terminals		
JK701,JK702	25045332		RJJ33T01
	Sockets		
CN1,CN4	25050547		RHR197ZA
CN17	25050541		RHR191ZA
CN18	25050526		NSCT-4P349
CN2	25050532		NSCT-10P355
CN21,CN22	25050349		NSCT-6P176
CN27,CN29	25050527		NSCT-5P350
CN28	25050545		RHR192ZA
CN3	25050547		RHR197ZA
CN43,CN44	25050500		NSCT-17P323
CN5	25050546		RHR193ZA
CN52-CN54	25050358		NSCT-15P185
CN6,CN7	25050528		NSCT-6P351
CN62	25050354		NSCT-11P181
CN65	25050543		RHR190ZA
CN66	25050525		NSCT-3P348
CN82	25050524		NSCT-2P347
JCN1	2009990159		REZ0140A
JCN16	2009990158		REZ0134A
JCN17	2009990157		REZ0131A
JCN20	2009990151		REZ0119A
JCN28	2009990153		REZ0118A
JCN3	2009990160		REZ0120A
JCN30	2009990154		REZ0132A
JCN42	2009990152		REZ0125A
JCN45	2009990164		REZ0126A
JCN5	2009990161		REZ0122A

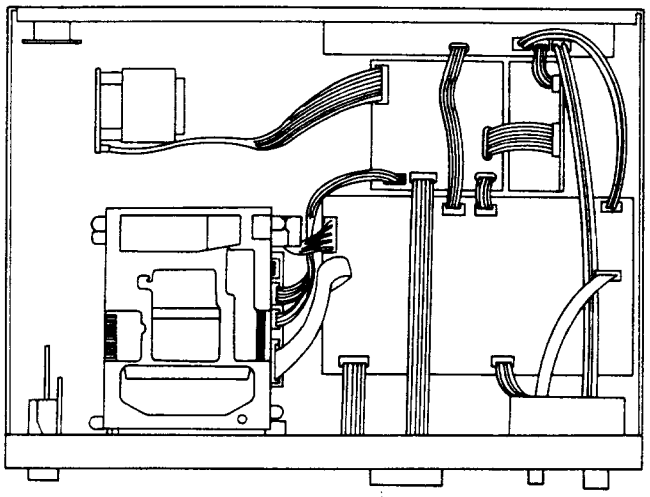
CIRCUIT NO.	PART NO.		DESCRIPTION
	Sockets		
JCN65	2009990156		REZ0142A
JCN8	2009990155		REZ0133A
JCN9	2009990162		REZ0121A
	Stereo headphone jack		
JK550	25045331		SJJD19
	Terminals		
JK301	25045327		SJF3057-7A-1
JK401,JK501	25045328		SJFD4-1
	AC inlet		
JK1	25050542		SJS9234B
	Fuseholder		
2	250113		SN5051
	Fuse		
F1	252023	!	0.5A-T

NOTE:THE COMPONENTS IDENTIFIED BY MARK ! ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

■ MEASUREMENTS AND ADJUSTMENTS

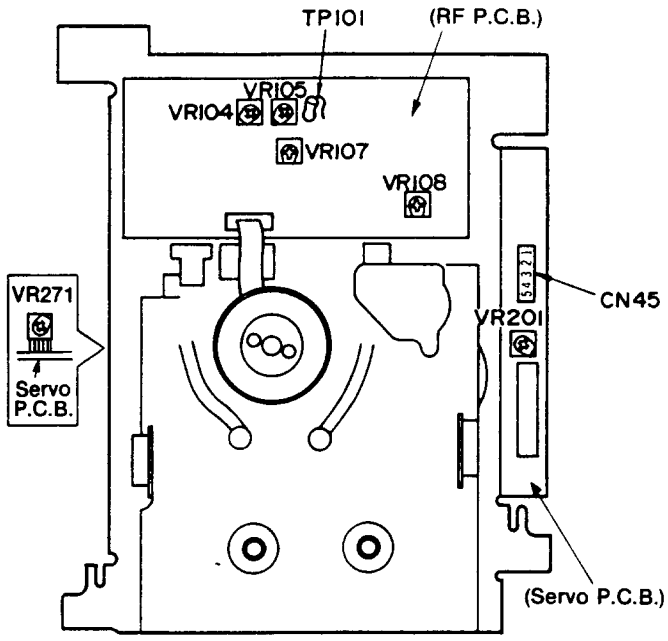
• PREPARATION

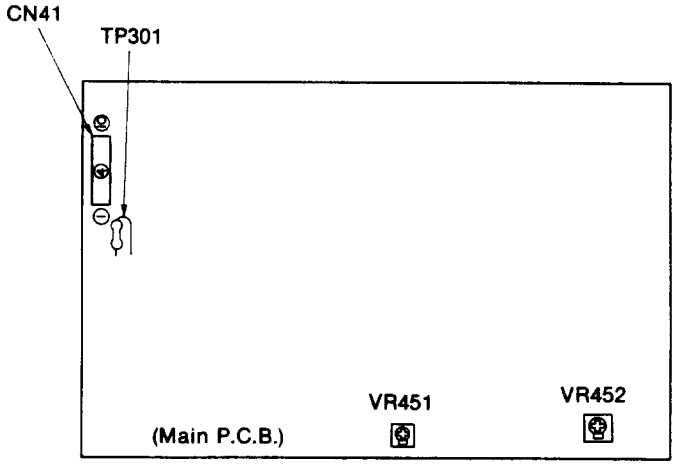
(1) Remove the cabinet



• ELECTRICAL ADJUSTMENT

• **Adjustment points**



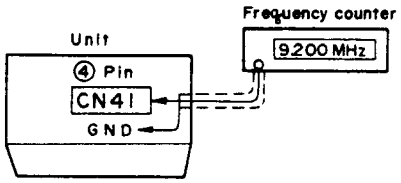


Equipment and Tools

- 2-channel 30 MHz oscilloscope (with external trigger and delay sweep) (with a 10 : 1 probe)
- Standard electrical tools and equipment
- Standard test tapes – RD-PG01 (PG reference), RD-ER01 (error rate)
- Blank tape for recording and playback (commercially available blank tape)
- Linearity adjusting tape: RD-LR02
- Post roller adjusting screwdriver: SZZV1102C
- Frequency counter

1. PLL Free Run Adjustment

1. Test equipment connection is shown in figure.
2. Power switch in "on" position.
3. Set the unit to cassette holder in "open" position.
4. Adjust **VR108** for **9.2±0.2MHz** on frequency counter reading.

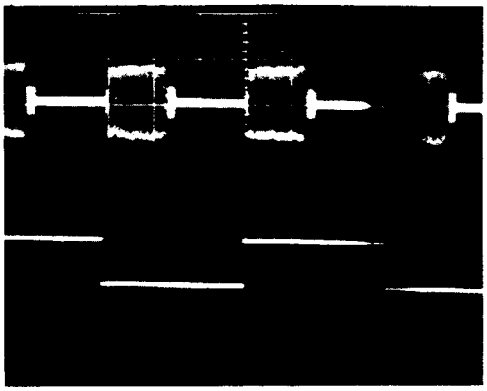


2. PG Phase Adjustment

1. Play the PG reference portion of the standard test tape (RD-PG01).
2. Set up the oscilloscope and connect as shown below.

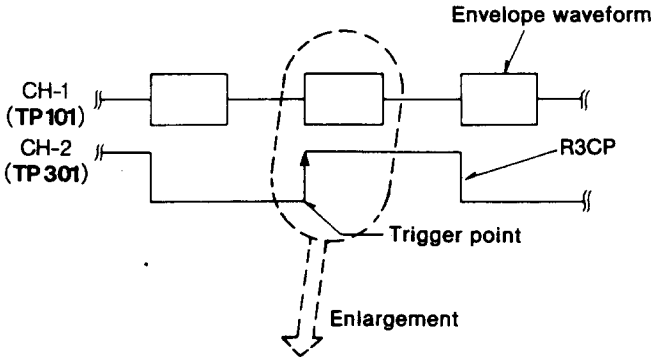
	CH-1	CH-2
Test point	**TP101 (RPRF)**	**TP301 (R3CP)**
Volts/Div.	50mV	0.5V
Time/Div.	5msec.	
Delay	50µsec.	
Trig.	CH-2	
Mode	CHOP	
AC-GND-DC	AC	DC
Adjustment point	**VR201**	

Note: GND is the shield plate of the RF circuit.

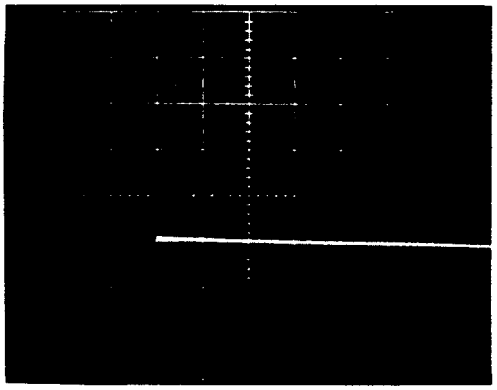


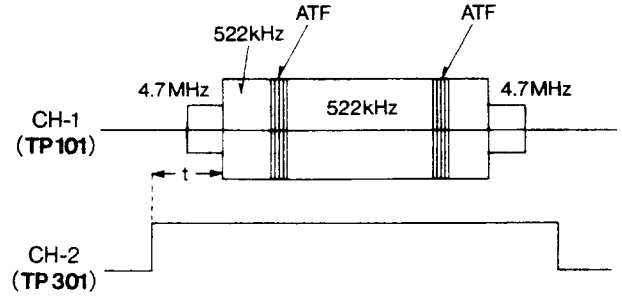
3. After set up, the waveform shown on the right appears.
4. The waveform in the figure on the right is enlarged using the delayed sweep. The point where the delayed sweep is used to enlarge the waveform is the leading edge of the CH-2 (R3CP) waveform.

   Delayed sweep – 50µsec.



5. Adjust **VR201** (located on the servo P.C.B.) so that the time "t" (in the figure below) from the leading edge of the waveform of CH-2 to the leading edge of the 522kHz waveform of CH-1 it is within **±40µsec** of the time indicated on the label of the standard tape (e.g. **170µsec**).





t: Value (µsec) indicated on the standard tape ±40µsec.

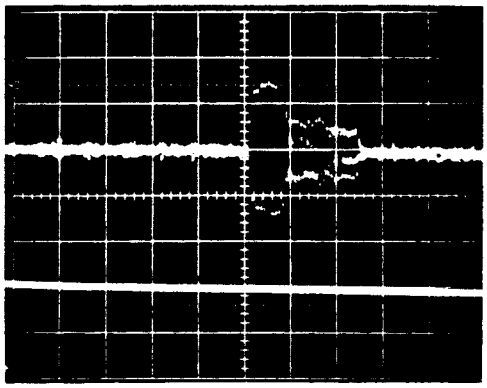
3. ATF Gain Adjustment

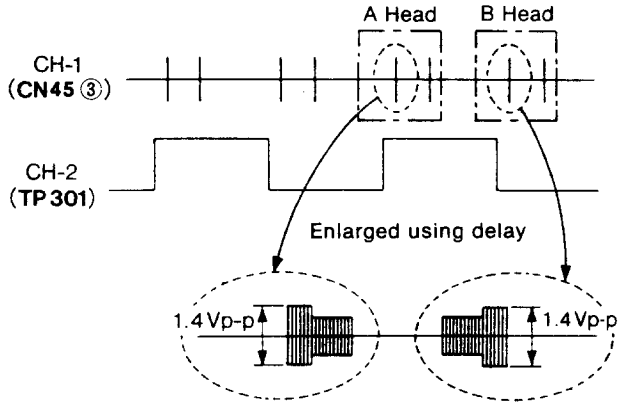
1. Play the **error rate measurement** standard test tape (RD-ER01).
2. Set up the oscilloscope and connect as shown below.

	CH-1	CH-2
Test point	**CN45 ③ (PILOT)**	**TP301 (R3CP)**
Volts/Div.	50mV	0.5V
Time/Div.	5msec.	
Delay	0.1msec.	
Trig.	CH-2	
AC-GND-DC	AC	DC
Adjustment point	**VR107**	

3. Monitor about 8 lines of the ATF waveform. Select the line with the largest amplitude and enlarge it using the 50µsec. delayed sweep.
4. Adjust **VR107** so that the amplitude of the waveform is **1.4Vp-p** check that the other smaller amplitudes are **1.2Vp-p** or higher.

Standard value: 1.4±0.2Vp-p





4. RF Recording Level Adjustment

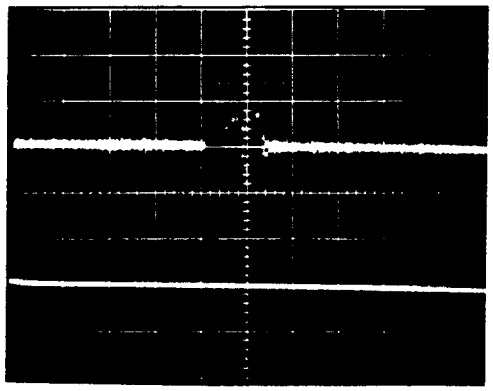
1. Load a blank tape into the unit, place the unit in the REC-play mode, and make a blank signal recording for 10 to 15sec. Rewind the tape and play back the recorded portion.
2. Connect and set up the oscilloscope as follows:

	CH-1	CH-2
Test point	**CN45 ③ (PILOT)**	**TP301 (R3CP)**
Volts/Div.	50mV	0.5V
Time/Div.	2msec.	
Delay	0.2msec.	
Trig.	CH-2	
AC-GND-DC	AC	DC
Adjustment point	**VR104**: Head A, **VR105**: Head B	

3. While playing back the erased portion of the tape, verify that the signal amplitude falls in the range of **1.4±0.2Vp-p**.

Standard value: 1.4±0.2Vp-p

4. If the signal amplitude is less than **1.2V**, turn **VR104** (head A) or **VR105** (head B) counter-clockwise until the amplitude falls into the specification. If it exceeds **1.4V**, turn the same variable resistors clockwise until the specification is met.
5. Repeat step 2 above again, then verify that the playback signal amplitude falls in the range specified in step 3.
(Repeat step 2, 3 and 4 above until the specification is met.)



5. ADC Offset Adjustment

This adjustment is necessary when the indication of the level meter is abnormal.

1. Load a blank tape into the deck and place the deck in REC-PAUSE mode.
2. Adjust **VR451** (Lch) and **VR452** (Rch) so that the indication of the level meter is not illuminated.

6. BOT/EOT Detection Sensitivity Verification and Adjustment

1. Make sure that the tape stops with the leader portion (the beginning and ending portion).

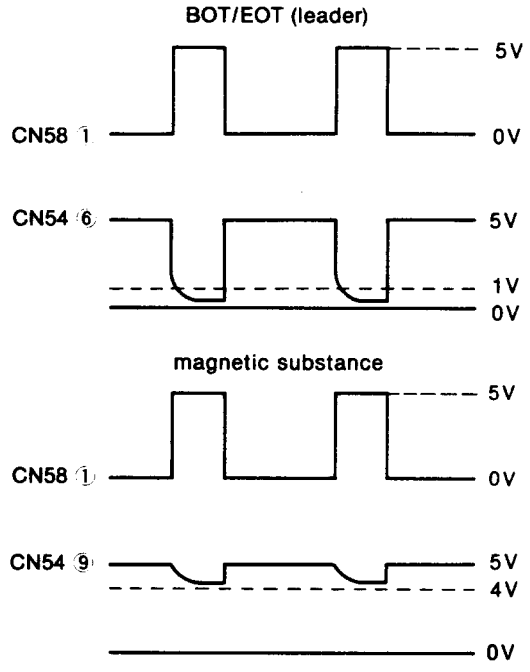
※ If the tape does not stop at the leader, make adjustment by following procedure outlined below.

①Insert a blank tape into the tape compartment of the set and press the playback button at the end of the tape.

②Set up the oscilloscope and connect as shown below.

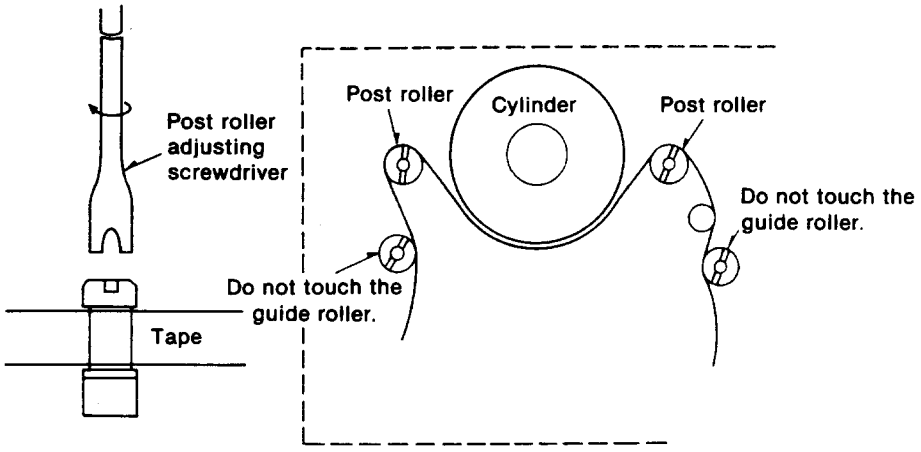
	CH-1	CH-2
Test point	**CN54** ⑥ (BOT/EOT) ⑨ (magnetic substance)	**CN58** ①
Volts/Div.	0.2V	0.2V
Time/Div.	2msec.	
Delay	——	
Trig.	CH-2	
AC-GND-DC	AC	DC
Adjustment point	**VR271**	

③Adjust the amplitude of waveform to less than **1V** at the magnetic substance and more than **4V** at the leader on **VR271**.



7. Linearity Adjustment

Caution: The post rollers are used for linearity adjustment. Gradually change the post roller heights until the RF signal envelope becomes rectangular.



• DAT Linearity Adjustment

1. Load the linearity adjusting tape (RD-LR02) into the deck.
2. Connect and set up the oscilloscope as follows:

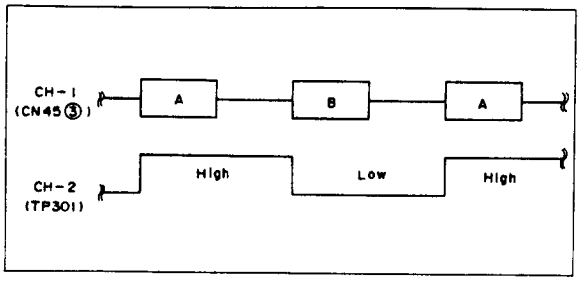
	CH-1	CH-2
Test point	**CN45 ③ (PILOT)**	**TP301 (R3CP)**
Volts/Div.	0.2V	2.0V
Time/Div.	Ⓐ 5msec. Ⓑ 1msec. Ⓒ 0.2msec.	
Delay	——	
Trig.	CH-2	
AC-GND-DC	AC	DC
Adjustment point	**Post rollers**	

3. Monitor the head "A" side of RF envelope waveform.

Note: When the waveform of TP301 (R3CP) is high, the envelope is output from the head "A".

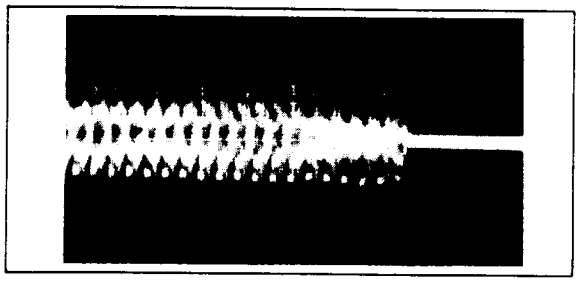
4. While playing back the linearity adjusting tape, gradually adjust the **post roller** heights until the RF signal envelope Ⓑ becomes rectangular.

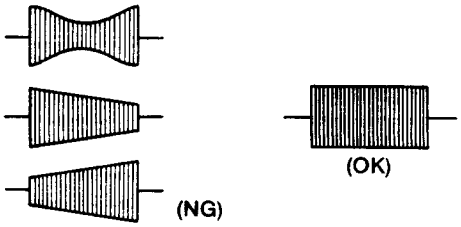
Ⓐ



Ⓑ

(OK)

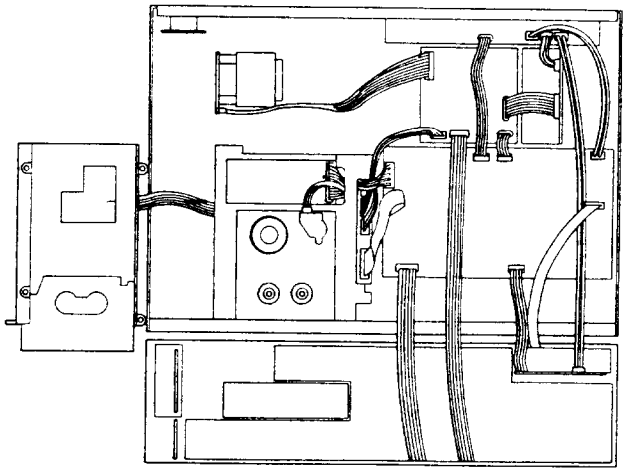




■ If the loading unit is to be removed for adjustment, note the following.

(PREPARATIONS)

(1) Remove the loading unit. (With the underside facing up.)
(Refer to Procedure 5 under "Disassembly Instructions." However, leave the flat cable and the connector as they are.)
(2) Open the cassette holder.
(3) Move the slider opening/closing plate of the removed loading unit in the direction indicated by the arrow in Fig. 1, and hook it above the prong of the reinforcement plate.
Caution: The slider opening/closing plate will be deformed if it is left as is.
(4) Place a tape with the slider lock released in the mechanism.
(5) Switch on the power and check the loading operation.



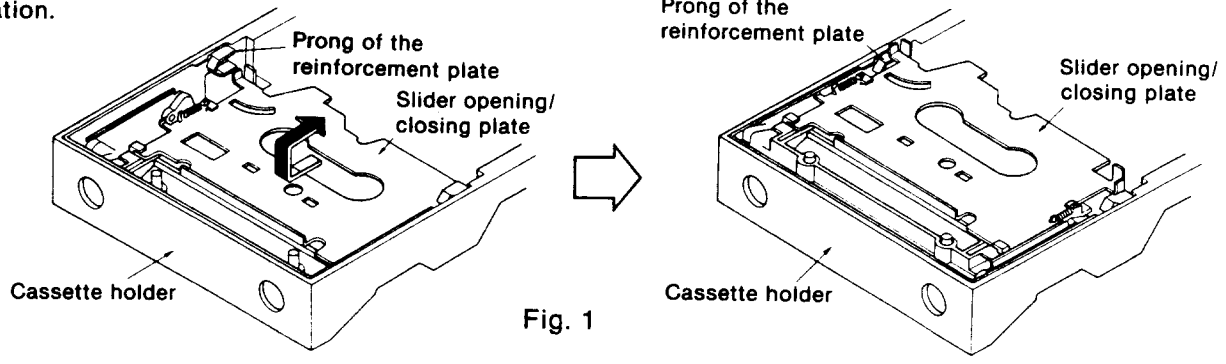


Fig. 1

■ TERMINAL FUNCTION OF IC'S

• IC101 (AN7030SE2): RF AMP.

Pin No.	Mark	I/O Division	Function
1	V_{CC} 1	I	Power supply terminal
2	ACH FB	O	Playback feed back signal (Ach)
3	ACH IN	I	Playback amp. signal (Ach)
4	GND 1	—	GND terminal
5	BCH IN	I	Playback amp. signal (Bch)
6	BCH FB	O	Playback feed back signal (Bch)
7	AREC PCM	I	RF recording level adj. terminal
8	AREC PLT		
9	AREC ATF		
10	BREC ATF		
11	BREC PLT		
12	BREC PCM		
13	REC CNT 1	I	Track pitch signal
14	REC CNT 2	I	ATF area det. signal
15	SRRF IN	I	Recording signal
16	GND 2	—	GND terminal
17	VREF	O	Reference voltage terminal (Not used, open)
18	AREC OUT	O	Recording signal (Ach)
19	BREC OUT	O	Recording signal (Bch)
20	BTL REC	O	Recording control signal
21	V_{CC} 2	I	Power supply terminal
22	REC ON	O	Recording drive terminal (REC: "H")
	PLAY ON	O	Playback drive terminal (PLAY: "H")

Pin No.	Mark	I/O Division	Function
24	HSW	I	Head switching signal
25	AR/RSEL	I	Not used, connected to power supply
26	R/PSEL	I	Recording/playback select signal (REC: "H", PLAY: "L")
27	EQ OUT	O	Equalization signal
28	EQ IN 3	I	Equalization amp. signal
29	EQ IN 2		
30	EQ IN 1		
31	BF REQ	I	Equalization amplitude drive terminal (Bch)
32	B PHASE	I	Equalization phase drive terminal (Bch)
33	B GAIN	I	Equalization gain drive terminal (Bch)
34	AF REQ	I	Equalization amplitude drive terminal (Ach)
35	A PHASE	I	Equalization phase drive terminal (Ach)
36	A GAIN	I	Equalization gain drive terminal (Ach)
37	SV RF	O	Playback signal
38	GND 3	—	GND terminal
39	A INT	I	Playback amp. signal (Ach)
40	B INT	I	Playback amp. signal (Bch)
41	B INT IN	O	Playback amp. signal (Bch)
42	A INT IN	O	Playback amp. signal (Ach)

• IC102 (AN7035SCE2): Playback PLL

Pin No.	Mark	I/O Division	Function
1	LPF	O	Buffer amp. 1 reference terminal
2	GND 1	—	GND terminal
3	ENVC	O	ENV time constant setting terminal
4	ENVR	I	ENV threshold voltage adj. terminal
5	RSENV	O	RF envelope signal
6	RSENVC	O	RSENV time constant setting terminal
7	RSRF	I	RF signal
8	DELOUT	O	RF signal
9	DELIN 1	I	Delay (45°) signal
10	DELIN 2	I	Delay (90°) signal
11	PDOUT	O	Phase comparator signal
12	VREF 1	I	V/I converter reference voltage terminal
13	VCOV	I	OSC frequency control terminal
14	R/P	I	Recording/playback select terminal (Not used, connected to GND)
15	VCOR	I	OSC frequency adj. terminal

Pin No.	Mark	I/O Division	Function
16	V_{CC} 1	I	Power supply terminal
17	VCOC 1	O	VCO terminal
18	VCOC 2	O	VCO terminal
19	V_{CC} 2	I	Power supply terminal
20	PLL CP 1	O	Clock (2CK) signal (Not used, open)
21	PLL CP 2	O	Clock (CK) signal
22	DEMCOD	O	NRZI demodulated signal for playback signal with PLL
23	SVSYNC	O	ATF sync. signal
24	GND 2	—	GND terminal
25	OP OUT 3	O	ATF 3 signal
26	OP IN 3	I	ATF 3 signal
27	OP OUT 2	O	ATF 2 signal
28	OP IN 2	I	ATF 2 signal
29	OP OUT 1	O	ATF 1 signal
30	OP IN 1	I	ATF 1 signal
31	VREF 2	I	Reference voltage terminal
32	COMP 1	I	Output amp. 1 (+) signal

• IC201 (MN6742SDR): Servo processor

Pin No.	Mark	I/O Division	Function
1	OP10A	O	Cylinder rotative stop signal
2	SCK	I	Serial clock signal
3	SDA	I/O	Serial data signal
4	OSC 1	I	System clock (8MHz) signal
5	OSC 2	O	
6	NRST	I	Reset signal
7	NC	—	Not connection
8	OP20A	O	SSP ready signal
9	NC	—	Not connection
10	V_{SS}	—	GND terminal
11	VHS	—	Not used, open
12	OP 101	O	CAPFG/RLFGT select signal
13	TP 2	O	R3CP/RLFGT select signal
14	TP 3	I	PLL off-set/parallel data signal
15	TP 4		
16	TP 5		
17	TP 6		
18	TP 7	I	PLL off-set/data effective flag terminal
19	TP 8	I	Not used, connected to power supply
20	MOS	I	Serial port/strobe signal
21	TST	I	Test mode terminal (Normal, connected to GND)
22	ENC	—	Connected to GND terminal
23	NC	—	Not connection
24	NC		
25	V_{DD}	I	Power supply terminal
26	NC	—	Not connection
27	RSW	—	Not used, open
28	HAS	O	A/D input select signal
29	AVM	—	Not used, connected to GND
30	VLP	—	Not used, open
31	STM	I	R3TU or RLFGT (64 P/R) signal
32	STR	I	Comparator reference signal of STM input

Pin No.	Mark	I/O Division	Function
33	CAE	O	Capstan velocity control signal
34	CYE	O	Cylinder velocity control signal
35	END	I	VREF or ATFTER voltage signal
36	VSY	I	$\overline{\text{CYLPG}}$ signal
37	ASH 1	I	Capstan FG or RLFGT signal after EXOR
38	NC	—	Not connection
39	AFB 1	O	Inverter amp. signal of ATFTER input (Not used, open)
40	NC	—	Not connection
41	AFG 1	I	ATF tracking error voltage terminal
42	ASH 2	O	Not used, connected to GND
43	AFB 2	O	Not used, open
44	NC	—	Not connection
45	AFG 2	I	Reference voltage terminal
46	VDA	I	Power supply terminal
47	VSA	—	GND terminal
48	ORE	O	Reference voltage terminal
49	IRE	I	
50	GND	—	GND terminal
51	IPL	O	Not used, open
52	NC	—	Not connection
53	CLP	I	Not used, connected to GND
54	CP 1	O	Not used, open
55	CP 2	I	Supply reel FG signal
56	NC	—	Not connection
57	NC		
58	CN 1	O	Not used, open
59	CN 2	I	Not used, connected to GND
60	CTL	O	Not used, open
61	PFG	I	Cylinder FG signal
62	PGM	I	Not used, connected to GND
63	CUL	O	Capstan rotative direction signal
64	NC	—	Not connection

• IC202 (MN53020SDQ): ATF

Pin No.	Mark	I/O Division	Function
1	NSNCOK	O	SYNC det. monitor terminal
2	SVAL	I	ATF select terminal
3	PCMOK	I	PCM playback monitor terminal
4	SPE	O	Starting pulse of counter track lock
5	SP 2	O	Sampling pulse signal for pilot signal of adjacent track
6	SP 1		
7	DCYLPG	I	Cylinder PG signal
8	DCAPFG 1	I	Capstan FG signal
9	DCAPFG 2		
10	DRLFGT	I	Take-up reel FG signal
11	DCYLFG	I	Cylinder FG signal
12	SYNC	I	ATF sync. det. terminal
13	NRST	I	Reset signal
14	R3CP	I	Timing signal for RF envelope signal control
15	ENVT		
16	FCH	I	System clock signal (9.408 MHz)
17	V_{DD}	I	Power supply terminal
18	V_{SS}	—	GND terminal
19	MODE 1	I	SYNC det. select terminal (Not used, connected to GND)
20	HFCH	I	Clock signal for PLL off-set data
21	PLLOFS	I	PLL off-set data signal

Pin No.	Mark	I/O Division	Function
22	TEST 6	—	Not used, connected to GND
23	P MODE	I	Pulse width select terminal
24 ∫ 28	TEST 1 ∫ TEST 5	I	Test terminal (Not used, connected to GND)
29	SPHT	—	Not used, open
30	HSWS	O	Head switching signal (33.33 Hz)
31	HSWR		
32	SEL A	I	CAPFGTU signal select terminal
33	SEL B	I	R3TU signal select terminal
34	PLL 0	O	Output signal after decoded 4 bit parallel data of PLLOFS
35	PLL 1		
36	PLL 2		
37	PLL 3		
38	MODE 2	—	Not used, open
39	V_{SS} 2	—	GND terminal
40	V_{DD} 2	I	Power supply terminal
41	R3TU	O	Building-up edge signal of R3CP/DRLFGT
42	CAPFGTU	O	Capstan FG signal/Take-up reel FG signal
43	CAPER	O	Capstan rotative direction control signal
44	NLNROK	O	Track linearity monitor terminal

• IC203 (AN8320NFA): Linear servo

Pin No.	Mark	I/O Division	Function
1	FG1 AO	O	Capstan FG signal
2	FG1 AI	I	Capstan FG (−) signal
3	FG1 FI	—	Frequency characteristic setting terminal
4	CYL PG	O	Cylinder PG signal
5	PGVR	—	PG delay time adj. terminal
6	CYPGI	I	PG schmidt comparator terminal
7	GND	—	GND terminal
8	SVRF	I	ATF terminal
9	CPD	—	Det. capacity connection terminal
10	CCI	O	Full-wave rectification buffer terminal
11	CCO	I	Clamp circuit terminal
12	SP 1	I	SP 1 terminal
13	SP 2	I	SP 2 terminal
14	VSPE	—	SPE setting terminal
15	SPE	I	SPE terminal
16	CSH	I	Hold capacity connection terminal
17	ATFTER	O	ATF control command signal
18	CFB	—	Phase compensation terminal
19	V_{CC}	I	Power supply terminal
20	ATFON	I	ATF ON terminal (Not used, connected to power supply)
21	PTBIA	—	Photo-transistor bias terminal (Not used, open)
22	VREF	O	Reference voltage terminal
23	LEDR 1	I	Bias voltage terminal
24	LEDH 1	—	Constant current terminal (Not used, open)
25	LEDR 2	I	Bias voltage terminal
26	LEDH 2	—	Constant current terminal (Not used, open)
27	CYL FG	O	Cylinder FG signal
28	CYF GSI	I	Cylinder schmidt comparator terminal
29	CYF GAO	O	Cylinder op. amp. terminal
30	CYF GAI	I	Cylinder op. amp. (−) terminal
31	NST BY	I	STAND BY signal (Not used, connected to power supply)
32	TF GAI	I	Take-up reel op. amp. (−) terminal
33	TF GAO	I	Take-up reel op. amp. terminal
34	TF GSI	I	Take-up reel schmidt comparator terminal
35	RLFGT	O	Take-up reel FG signal
36	RLFGS	O	Supply reel FG signal
37	SF GSI	I	Supply reel schmidt comparator terminal
38	SF GAO	O	Supply reel op. amp. terminal
39	SF GAI	I	Supply reel op. amp. terminal
40	V_{CC}	I	Power supply terminal
41	FG 2FI	—	Frequency characteristic setting terminal
42	FG 2AI	I	Capstan FG (−) signal
43	FG 2AO	O	Capstan FG signal
44	FG 2SI	I	Captan FG schmidt comparator terminal
45	CPFG 2	O	Capstan FG signal
46	FILSLD	I	Frequency characteristic $\overline{\text{DOWN}}$ terminal
47	CPFG 1	O	Capstan FG signal
48	FG 1SI	I	Capstan FG schmidt comparator terminal

• IC271 (MN17541SDN2): Mechanism control

Pin No.	Mark	I/O Division	Function
1	NSBOA	O	Serial data signal
2	NRST	I	Reset signal
3	NSYNC	—	Not used, open
4	X 2		
5	X 1		
6	V_{SS}	—	GND terminal
7	OSC 2	—	Not used, open
8	OSC 1	I	Clock signal
9	V_{DD}	I	Power supply terminal
10	NTC1B	I	Supply reel FG signal
11	NIRQ 0	I	Take-up reel FG signal
12	NIRQ 1	I	Transfer strobe signal of system control
13	P00 (MSTB)		
14	P 01 (MRDY)	O	Transfer ready signal of system control
15	P 02 (NSSTB)	O	Transfer strobe signal
16	P 03 (NSRDY)	I	Transfer ready signal
17	P 10 (ATFGT)	O	ATF gain (× 1/2) select terminal
18	P 11 (REWGT)	O	REW FG • PG gain select terminal
19	P 12 (LPMOD)	—	Not used, open
20	P 13 (MODMT0)	O	Mode motor control signal
21	P 20 (MODMT1)		
22	P 21 (MODMT2)		
23	P 22	—	Not used, open
24	P23 (PLG)	O	Plunger control signal
25	P 30	—	Not used, open
26	P 31		
27	P 32 (LOAD 1)	O	Tray motor control (+) terminal
28	P 33 (LOAD 2)	O	Tray motor control (−) terminal
29	P 40	—	Not used, open
30	P 41 (DEW)	I	Dew sensor det. signal
31	P 42 (EOT)	I	Tape end det. signal
32	P 43 (BOT)	I	Tape begin det. signal
33	P 50 (OPEN)	I	Cassette open det. signal

Pin No.	Mark	I/O Division	Function
34	P 51 (CLOSE)	I	Cassette close det. signal
35	P 52 (LOAD S)	I	Loading start det. signal
36	P 53 (LOAD E)	I	Loading stop det. signal
37	P 60 (SW 2)	O	Test terminal
38 ∫ 40	P 61 (MMOD 0) ∫ P 63 (MMOD 2)	I	Tape mode det. signal
41 ∫ 44	P 70 (MBUS 0) ∫ P 73 (MBUS 3)	I/O	Transfer bus terminal of system control
45	P 80 (RCC)	—	Not used, open
46	P 81 (FIL)	O	FILTER select signal
47	P 82 (ATFON)	—	Not used, open
48	P 83 (NSTBY)	—	Not used, open
49	P 90 (NSRST)	O	Reset signal
50	P 91 (LEDDRV)	O	Tape begin/end LED control signal
51	P 92 (PCMOK)	I	PCM playback det. signal
52	P 93 (SVAL 0)	I	ATF effective position setting terminal
53	NEXPS	I	Not used, connected to power supply
54	PA 0 (NSNCOK)	I	ATF sync. det. terminal
55	PA 1 (NLNOK)	I	Track linearity det. terminal
56	PA 2 (CAPER)	I	Capstan rotative direction command signal
57	PA 3	—	Not used, open
58	PB 0 (TH 1)	I	Tape hall det. signal
59	PB 1 (TH 2)		
60	NSBTB	I	Muting det. signal
61	NSBIB	I	Test terminal
62	NSBOB		
63	NSBTA (SCLK)	I	Serial transfer clock signal
64	NSBIA (SDAT)	I/O	Serial transfer data signal

• IC301 (MN188161SDS4): System control

Pin No.	Mark	I/O Division	Function
1	V_{DD}	I	Power supply terminal
2 ⟆ 9	P 67 (SPDT 7) ⟆ P 60 (SPDT 0)	I/O	Signal processor transfer address and data bus terminal
10	P 57 (SPRDY)	I	Signal processor data transfer command signal
11	P 56 (PBLANK)	I	Blank skip select ("H": no skip, "L": skip)
12	P 55 (R3CP)	I	Frame sync. signal
13	P 54 (PMID6B)	—	Main ID6 select terminal
14	P 53 (PMID6A)		
15	P 52	I	Not used, connected to resistor
16	P 51	I	Not used, connected to resistor
17	P 50 (PDIOSEL)	I	D I/O select ("H": AES/EBV, "L": IEC)
18	EXI	—	Not used, connected to GND
19	EXO	—	Not used, open
20	NRST 1	I	Reset signal ("L": RESET)
21	P 47 (NSERVRST)	O	Reset signal to servo block
22	P 46	—	Not used, open
23	P 45	—	
24	P 44	—	
25	P 43 (SLAD)	O	DIGITAL IN PLL/crystal select terminal ("L": PLL, "H": crystal)
26	P 42 (XCK32)	O	32kHz OSC control ("H": OSC, "L": STOP)
27	P 41 (XCK44)	O	44.1kHz OSC control ("H": OSC, "L": STOP)
28	P 40 (XCK48)	O	48kHz OSC control ("H": OSC, "L": STOP)
29	P 27 (NPRDY)	I	Transfer ready signal from panel control
30	OSC 1	I	Crystal OSC terminal
31	OSC 2	O	
32	V_{SS}	—	GND terminal
33	XI	—	Not used, open
34	XO	—	
35	P 26	—	Not used, connected to power supply
36	P 25 (RF ENV)	I	RF envelope signal

Pin No.	Mark	I/O Division	Function
37	P 37 (FLGCLK)	O	Clock signal of flag counter
38	P 36 (FLGDT)	O	Data signal of flag counter
39	P 35 (TP)	O	Track pitch signal ("L": normal)
40	P 34 (UNLOCK)	O	DIGITAL-IN PLL unlock signal ("L": det.)
41	P 33	—	Not used, open
42	P 32 (DISCHG)	O	DIGITAL-IN PLL discharge signal
43	P 31 (DINPLINH)	O	DIGITAL-IN PLL prohibition signal ("H": prohibition)
44	P 30 (ANRST)	O	Reset signal ("H": RESET) to DAC
45	P 21 (HSW)	I	Head switching pulse signal
46	P 20 (NMRDY)	I	Transfer command signal from mechanism control
47	P 01	—	Not used, open
48	P 00	—	
49	P 17 (PTXD)	O	Serial data transmission terminal
50	P 16 (PRXD)	I	Serial data reception terminal
51	P 15 (PCLK)	O	Serial data transmission/ reception clock signal
52	P 14	—	Not used, open
53 ⟆ 56	P 13 (MDT 3) ⟆ P 10 (MDT 0)	I/O	Transfer data bus of mechanism control
57	P 77	—	Not used, open
58	P 76 (NDEMP)	O	de-emphasis signal
59	P 75 (SGMTG)	O	Muting signal
60	P 74 (DOUTTH)	O	Digital out through select ("H": through)
61	P 73 (NRST 2)	O	Reset signal
62	P 72 (MSTB)	O	Transfer command terminal of mechanism control
63	P 71 (SPSTB)	O	Signal processor strobe signal
64	P 70 (SPAW)	O	Signal processor address setting signal

Pin No.	Mark	I/O Division	Function
29 ⟩ 35	IC	—	Not used, open
36	NC	—	Not connection
37	NSUB	—	Not used, connected to power supply terminal
38	TV_{DD}	I	Power supply terminal
39	DOUT	O	Digital data signal
40	TV_{SS}	—	GND terminal
41	TEST	I	Test terminal (Connected to power supply)
42	DV_{SS}	—	GND terminal

• IC501 (MN6470): Digital filter & D/A converter

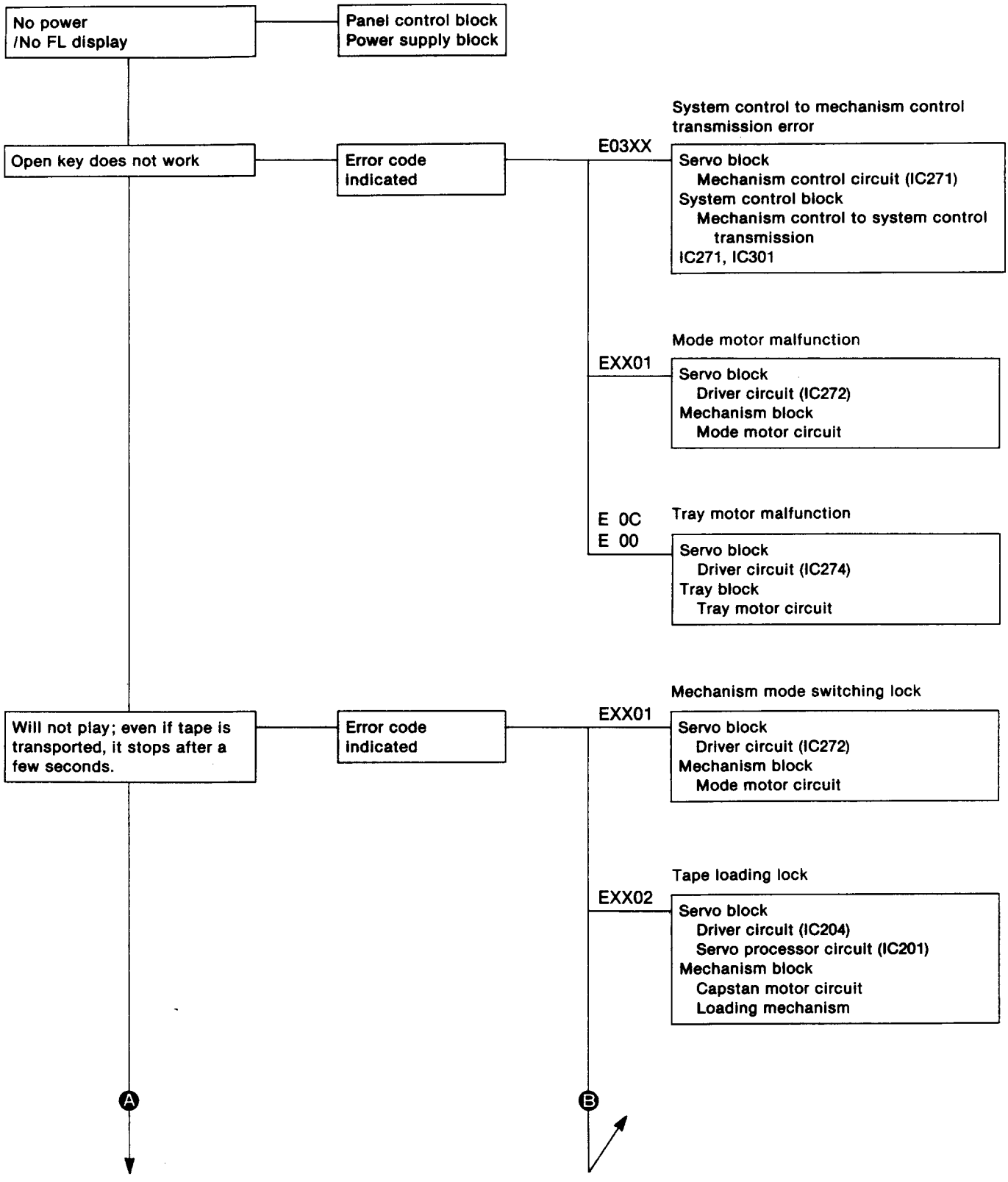
Pin No.	Mark	I/O Division	Function
1	MLD	I	Microcomputer command load signal (Not used, connected to power supply)
2	RSB	I	Reset terminal ("L": reset)
3	IE	I	Not used, connected to GND
4	TP1	O	Test terminal
5	TP2		
6	TEST 1	I	Test terminal (Connected to GND)
7	TEST 2		
8, 9	NC	—	Not connection
10	V_{DD} 4	I	Power supply terminal
11	OUT L−	O	Lch (−) data signal
12	A V_{SS} 4	—	GND terminal
13	A V_{SS} 3		
14	OUT L+	O	Lch (+) data signal
15	A V_{DD} 3	I	Power supply terminal
16	NC	—	Not connection
17	A V_{DD}	I	Power supply terminal
18	OUT R+	O	Rch (+) data signal
19	A V_{SS}	—	GND terminal
20	A V_{SS}		
21	OUT R−	O	Rch (−) data signal
22	A V_{DD}	I	Power supply terminal
23	D V_{DD}	I	Power supply terminal
24	D V_{SS}	—	GND terminal
25	X2	I	Crystal OSC terminal
26	X1		
27	NC	—	Not connection
28	D V_{DD}	I	Power supply terminal
29	D V_{SS}	—	GND terminal
30	NSUB	I	Sub straight terminal (Not used, connected to power supply)
31	ZFLGB	O	Zero det. terminal
32	128FS	—	Not used, open
33	LRPOL	I	LR clock polarity select terminal (Not used, connected to GND)
34	LRCLK	I	LR discrimination signal
35	BCLK	I	Serial bit clock signal
36	SRDATA	I	Serial data signal
37	D V_{SS}	—	GND terminal
38	D V_{DD}	I	Power supply terminal
39	256FS	O	256fs signal
40	PD	I	Power down terminal (Not used, connected to GND)
41	MDATA	I	Microcomputer command data signal (Not used, open)
42	MCLK	I	Microcomputer command clock signal (Not used, connected to power supply)

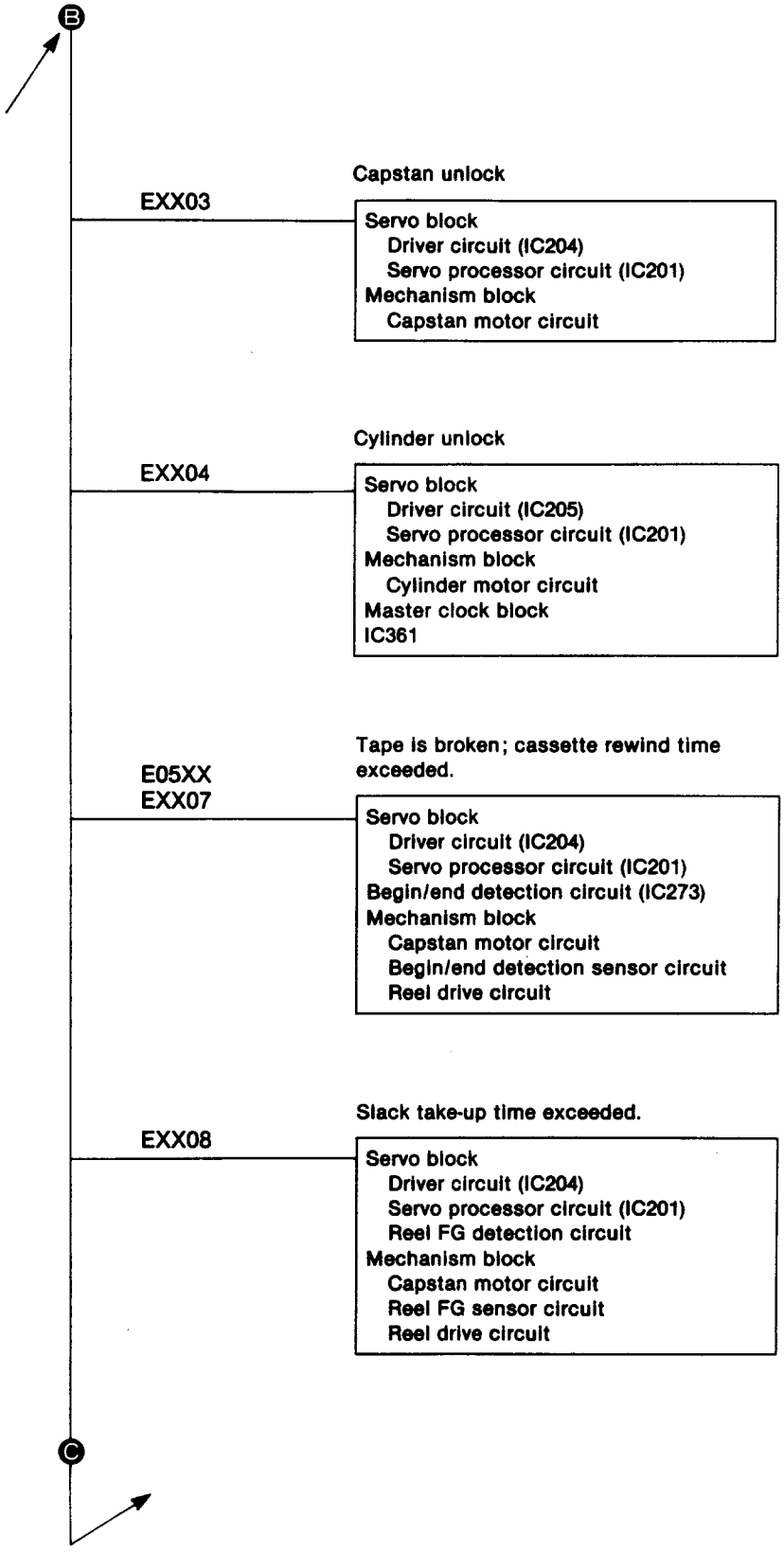
• IC601(M50754-164EP): Panel control & FL drive

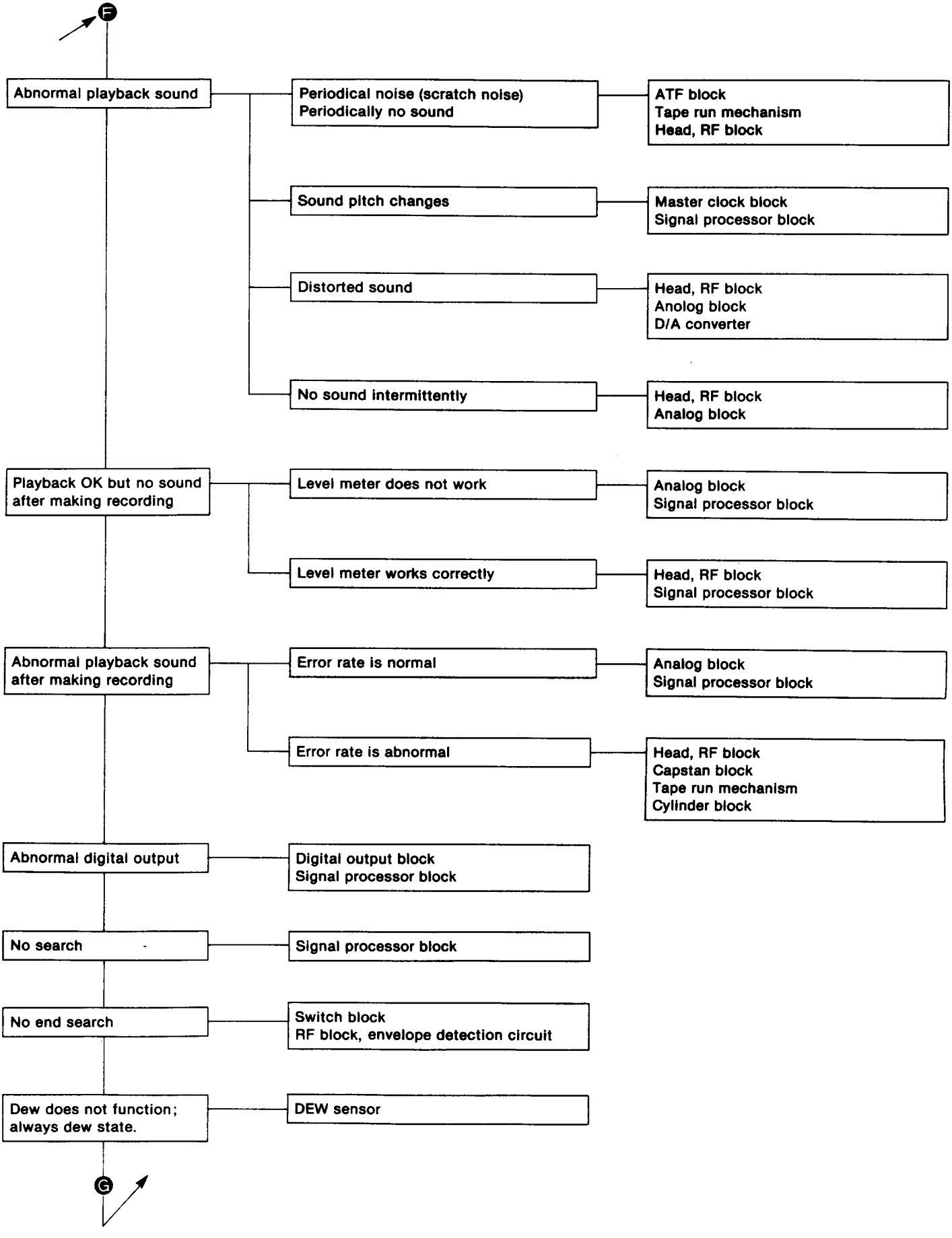
Pin No.	Mark	I/O Division	Function
1	V_{SS}	—	GND terminal
2	P 27	O	Input select signal (DIGITAL↔ANALOG)
3	P 26	O	LED display drive terminal (PAUSE)
4	P 25	O	LED display drive terminal (REC)
5	P 24	O	LED display drive terminal (PLAY)
6 ⟆ 8	P 23 ⟆ P 21	I	Key return signal
9	P 20	O	Buffer control signal
10	NC	—	Not connection
11	NPRDY	O	Ready signal
12	NTRCLK	I/O	Serial data transmission/ reception clock signal
13	RXD	O	Serial data transmission signal
14	TXD	I	Serial data reception signal
15	P 33	—	Not connection
16	P 32		
17	P 31	O	LED display drive terminal (S. PLAY)
18	P 30	O	LED display drive terminal (A. PNO)
19	INT 1	I	RI input/output
20	INT 2	I	Remote control signal
21	CNV_{SS}	—	GND terminal
22	RST	I	Reset signal ("L": RESET)
23	NC	—	Not connection
24	X IN	I	Master clock terminal (6MHz)
25	X OUT	O	
26	NC	—	Not connection
27	X CIN	—	Not used, connected to GND
28	X COUT	—	Not used, open
29	V_{SS}	—	GND terminal
30	NC	—	Not connection
31	P 57	I	Key return signal
32	P 56		

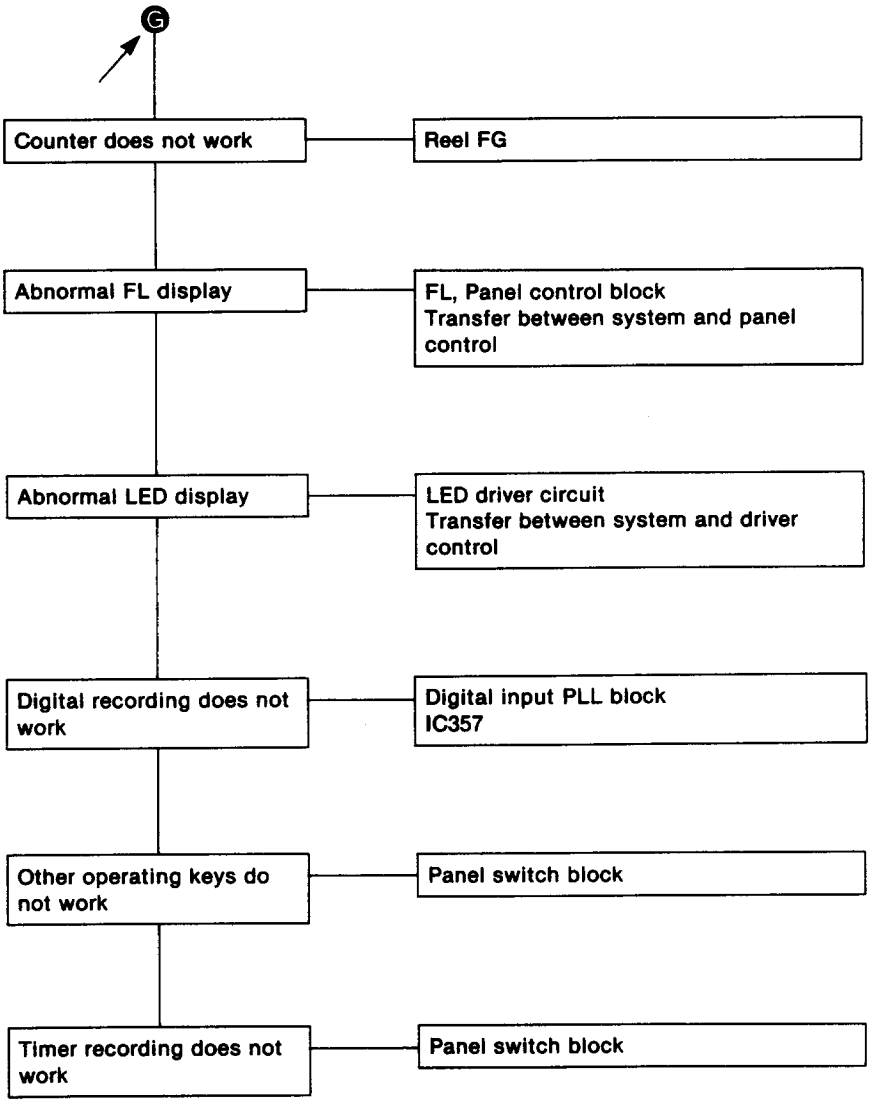
Pin No.	Mark	I/O Division	Function
33	P 55	I	Key return signal
34	P 54		
35	VP	I	Power supply terminal for FL drive
36	P 51	O	Segment signal for FL drive
37	P 50		
38 ⟆ 45	P 17 ⟆ P 10		
46	NC	—	Not connection
47	P 07	O	Segment signal for FL drive
48	P 06		
49	P 05		
50	P 04		
51	P 03		
52	P 02		
53	P 01		
54	P 00		
55	P 47		
56	P 46		
57	P 45		
58	P 44		
59	P 43		
60	P 42		
61	P 41		
62	P 40		
63	V_{CC}	I	Power supply terminal
64	V_{CC}		
65	V_{SS}	—	GND terminal
66	P 65	O	Digit signal for FL drive and key scan signal
67	P 64		
68	P 63		
69	P 62		
70	P 61		
71	P 60		
72	NC	—	Not connection

■ TROUBLESHOOTING




B
EXX03
Capstan unlock
Servo block
Driver circuit (IC204)
Servo processor circuit (IC201)
Mechanism block
Capstan motor circuit
EXX04
Cylinder unlock
Servo block
Driver circuit (IC205)
Servo processor circuit (IC201)
Mechanism block
Cylinder motor circuit
Master clock block
IC361
E05XX
EXX07
Tape is broken; cassette rewind time exceeded.
Servo block
Driver circuit (IC204)
Servo processor circuit (IC201)
Begin/end detection circuit (IC273)
Mechanism block
Capstan motor circuit
Begin/end detection sensor circuit
Reel drive circuit
EXX08
Slack take-up time exceeded.
Servo block
Driver circuit (IC204)
Servo processor circuit (IC201)
Reel FG detection circuit
Mechanism block
Capstan motor circuit
Reel FG sensor circuit
Reel drive circuit
C


F
Abnormal playback sound
Periodical noise (scratch noise)
Periodically no sound
ATF block
Tape run mechanism
Head, RF block
Sound pitch changes
Master clock block
Signal processor block
Distorted sound
Head, RF block
Anolog block
D/A converter
No sound intermittently
Head, RF block
Analog block
Playback OK but no sound after making recording
Level meter does not work
Analog block
Signal processor block
Level meter works correctly
Head, RF block
Signal processor block
Abnormal playback sound after making recording
Error rate is normal
Analog block
Signal processor block
Error rate is abnormal
Head, RF block
Capstan block
Tape run mechanism
Cylinder block
Abnormal digital output
Digital output block
Signal processor block
No search
Signal processor block
No end search
Switch block
RF block, envelope detection circuit
Dew does not function; always dew state.
DEW sensor
G


G
Counter does not work
Reel FG
Abnormal FL display
FL, Panel control block
Transfer between system and panel control
Abnormal LED display
LED driver circuit
Transfer between system and driver control
Digital recording does not work
Digital input PLL block
IC357
Other operating keys do not work
Panel switch block
Timer recording does not work
Panel switch block

■ KEY POINTS FOR TROUBLESHOOTING

- Mechanism block
  - Loading mechanism
    - Post roller
    - Tension regulator
    - Pinch roller
    - Brake lever
  - Brake mechanism
    - Brake lever
    - Solenoid
    - Solenoid driver
  - Mechanism switch block
    - Tape hole detection switch
    - Cassette detection switch
    - Holder switch
  - Reel FG block
    - Detection photo transistor
    - Detection LED
    - Reel FG amp (servo P.C.B.)
  - FPC & FPC connector

- Mode motor block
  - Mode motor
  - Mode switch
  - Mode motor driver circuit

- Master clock block
  - 28 MHz oscillator
  - 16 MHz, 22 MHz, 24 MHz oscillate and select circuit

- Panel switch block
  - Switch
  - Panel control IC

- Head, RF block
  - Head FPC & FPC connector
  - Head dirty
  - Head cracked or damaged
  - RF recording current
  - Playback eye pattern

- Tape begin/end detection block
  - Begin/end detection photo transistor
  - Begin/end detection LED
  - Comparator circuit
  - FPC & FPC connector

- Power supply block
  - Power supply regulator output
  - Fuse

- Capstan block
  - Capstan FG
  - FG amp
  - Motor driver output
  - Motor current

- Cylinder block
  - Cylinder FG
  - Cylinder PG
  - FG amp
  - PG amp
  - Motor driver output
  - Motor current

- ATF block
  - RF ATF output
    - ATF SYNC output
  - ATF select circuit
  - ATF gate allay

- Signal processor block
  - Data & clock to D/A
  - Data & clock to A/D
  - All clocks

- Digital output block
  - Digital output PB

- Panel control block
  - Panel control block
  - Transfer between panel and system control
  - Panel control reset

- Analog block
  - Input amplifier
  - Output amplifier
  - Muting circuit
  - A/D converter
  - D/A converter

■ ABOUT THE ERROR RATE

If the error rate is normal, it can be judged that everything up to signal processing, meaning the operation of the RF head mechanism, is normal.
Thus, when there is a problem with playback, if the error is normal, it can be assumed that the origin of the problem is in the analog system.

■ ABOUT THE LEVEL METER

Just as for the error rate, if the level meter is operating normally, it indicates that the signal is reaching signal processing.
In other words, if there is no problem with the level meter during playback, it indicates that the head and the RF are outputting the signal.
In addition, if there is no problem with the level meter during recording, it indicates that the analog system (input amplifier and AD) is functioning normally.

■ ERROR DISPLAY AND PROBLEM LOCATION

Display procedure

Simultaneously press the counter mode key, the counter reset key, and the pause key. The various internal data will be indicated in the counter section of the fluorescent lamp display.

There are four types of data as shown below; the data indicated will change each time the counter mode key is pressed.

① Total error rate for head A and head B.	"A" and "B" will light up in the repeat indication of the fluorescent lamp display.
② Error rate for head A	"A" will light up in the repeat indication of the fluorescent lamp display.
③ Internal code for microcomputer processing	
④ Error codes for system control (left) and mechanism control (right) (Refer to the next page.)	"E" will light up in the farthest left digit of the counter.

To return to the normal display mode, press the counter reset key.
Note that the error codes will be cleared when the tray is opened.

■ ERROR CODE TABLE

Error code (Note. 1)	System control error code		Mechanism control error code	
	Processing (Note 2)	Contents	Processing (Note 2)	Contents
1	Test operation	R3CP clock malfunction	Unload	Mechanism mode switching lock
2	Test operation	HSW clock malfunction	Unload	Tape loading lock
3	Transmission omitted	Faulty transmission of the mechanism control	Unload	Capstan unlock
4	Unload	Still protection during operation	Unload	Cylinder unlock
5	Unload	Broken tape	Unload	Reel unlock
6	Unload	Faulty transmission of SP1	Unload	Sum of reel cycles cannot be measured.
7			Unload	In-cassette rewind time exceeded.
8			Unload	Slack tape-up time exceeded.
9			Unload	Tape jamming (Supply side)
A			Unload	Tape jamming (Take-up side)
B (−)			Unload	Gear does not engage.
C			Tray stop	Initial tray setting not possible.
O		——		No error
FF (blank)		No error		——

Note 1: Display mode

E	X1	X2

E: Indicates that mode is the error rate display mode.
X1: System control error code
X2: Mechanism control error code

Note 2: Processing when an error occurs

Test operation:
Internal clock of the system control temporarily connects for operation.

Transmission omitted:
Transmission processing stopped.

Unload:
Tape is unloaded.

■DAT MAINTENANCE CHART

• DAT Head and Tape Transport Cleaning

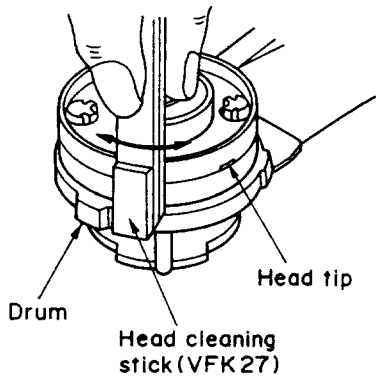
Through normal usage of any tape machine, dirt and debris from the tape accumlates on the heads, which eventually causes performance problems. By using a cleaning cassette regularly, dirt buildup can be minimized, prolonging the line of the tape heads, and also keeping tape posts, tape guides, and the pinch roller clean.

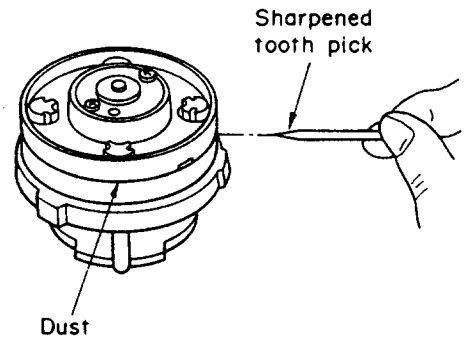
• CLEANING

1. Play the cleaning cassette (Panasonic Part No. RT-RCLP) for 15-20 seconds.
2. Do not use the same part of the cleaning tape more than once.
3. Clean all tape contact surfaces, including the upper and lower drum, thoroughly with a soft cloth soaked in alcohol.
4. Clean both heads by gently rubbing in a horizontal direction, as depicted, using a head cleaning stick (VFK27) or a lint free cloth moistened with alcohol.
5. Wipe all tape contact surfaces, including upper and lower drum, with a dry soft cloth to ensure that all residual moisture is removed from the tape contact surfaces.

Note:

1. When cleaning the upper drum, hold it secure by the top edges with your finger tips.
2. Occasionally, dirt or debris may become lodged in the air bearing channels that are cut in the upper drum's surface. This can be removed by gently dislodging it with a sharpened toothpick.
3. The amount of solvent applied to the head drum should be used in moderation. Excess alcohol will dilute and remove the bearing lubricant in the capstan motor and rotary guides.

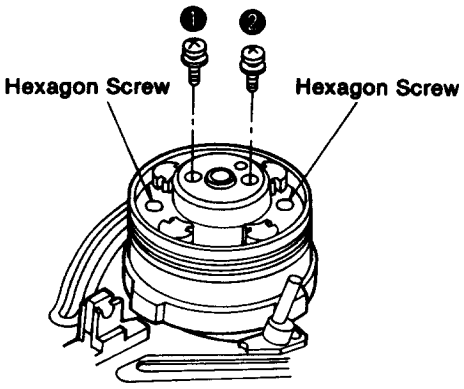


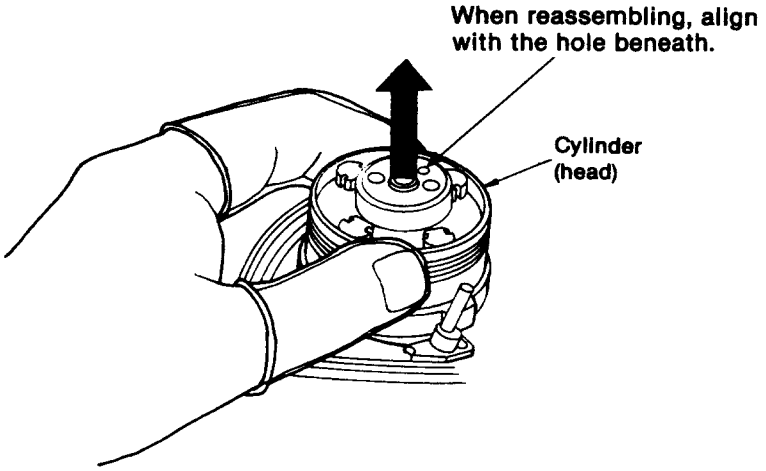


• MECHANISM CONTROLS AND FUNCTIONS

① LIGHT HOUSE TYPE RADIATION LED	Lighthouse-shaped, LEDs blink at start and end of tape.
② CYLINDER	30mm in diameter, 40 FG pulses, maintains specified speed of 1000 to 3000rpm.
③ T. POST ROLLER	Regulates tape travel position (upper edge).
④ T. INCLINED BASE (FIXED)	Regulates angle (90°) at which tape is wound around cylinder (stationary).
⑤ T. STOPPER	Determines position of T post roller base during loading.
⑥ LOAD SW	Two-bit rotary switch, detects loading position.
⑦ PINCH ROLLER	Presses against tape during play and review.
⑧ T. FIXED POST	Regulates tape travel position.
⑨ CAPSTAN MOTOR	1.5mm in diameter, 290 FG pulses.
⑩ LOAD HOLDER	Contains loading drive gear and worm gear, engages and disengages M gear A.
⑪ T. GUIDE ROLLER	Regulates tape travel position (top edge).
⑫ DATUM PIN	Regulates width and height (right side) during loading of cassette tape.
⑬ GUIDE ARM STOPPER	Determines position of T guide roller base K during loading.
⑭ LOAD SELECT LEVER	Switches engagement and disengagement of loading gear in accordance with loading conditions.
⑮ BEGIN DET. SENSOR	Light-receiving element for LED (detection at start of tape).
⑯ PINCH LEVER	Presses pinch roller against tape during play and review.
⑰ GUIDE LINK	Links T post roller base and guide roller base.
⑱ PINCH ARM	Comprised of pinch roller and T holding post, presses against the capstan.
⑲ PIN-PRESSURE LINK	Connected by the pin pressure spring and the pinch arm.
⑳ T. REEL (TAKE UP SIDE)	Take-up reel base, 64 FG pulses.
㉑ CASSETTE SW	Detects cassette information (mistaken erasure, cassette detection).
㉒ T. BRAKE	Presses brake gear against reel base gear to perform braking.
㉓ IDLER GUIDE	Holding cover for idler arm and S and T brakes.
㉔ IDLER ARM	Moves left or right in accordance with mode condition, transmits movement of counter gear to S and T reels.
㉕ IDLER GEAR	Transmits movement to S and T reels in accordance with mode.
㉖ BT LEVER	Applies back tension to T reel during review.
㉗ BT SPRING	Provides pressure for back tension lever.
㉘ S. BRAKE	Presses brake shoe against S reel base gear to perform braking.
㉙ S. REEL (SUPPLY SIDE)	Supply reel base, 64 FG pulses.
㉚ MODE MOTOR	6.5V DC motor, switches mode by forward and reverse revolution.
㉛ TENSION SPRING	Provides back tension force of tension regulator.
㉜ TENSION BAND	Mounted to tension regulator, applies back tension to S reel base.
㉝ TENSION ARM	Detects tape condition and applies back tension during play and review.
㉞ END DET. SENSOR	Light-receiving element for LED (detection at end of tape).
㉟ DATUM PIN	Regulates width and height (left side) during loading of cassette tape.
㊱ LID OPENER	Opens cassette lid during loading of tape.
㊲ S. GUIDE ROLLER	Regulates tape travel position (bottom edge).
㊳ S. FIXED POST	Regulates tape travel (bottom edge).
㊴ S. POST ROLLER	Regulates tape travel position (top edge).
㊵ S. STOPPER	Determines position of S post roller base during loading.
㊶ LOADING CAM	Uses movement transmitted from loading worm to move loading lever.
㊷ LOADING WORM	Transmits movement of loading drive gear and loading cam.
㊸ LOAD DRIVE GEAR	Transmits movement of M gear A and loading worm, engages and disengages in accordance with mode.
㊹ MR DET. ELEMENT	Detects magnetic changes (290 pulses) of flywheel.
㊺ PINCH ROLLER SPRING	Mounted to the pinch arm, returns the pinch roller.
㊻ LOAD GUIDE HOLDER	Holding cover of the loading arm and loading lever.
㊼ MODE GUIDE PLATE	Holding cover of the various gears, holds the plunger in position.
㊽ BRAKE PLUNGER	5V, 200mA, switches brakes on and off in accordance with the mode.

• REMOVAL OF THE UPPER CYLINDER



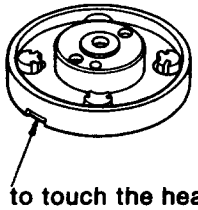


1. Remove the 2 screws (❶, ❷).

Caution: Please do not touch Hexagon screws.

2. Remove the cylinder (head) in the direction of the arrow.

   Note: Do not touch the cylinder (head) with your bare hand; always be sure to wear a glove or other protection.

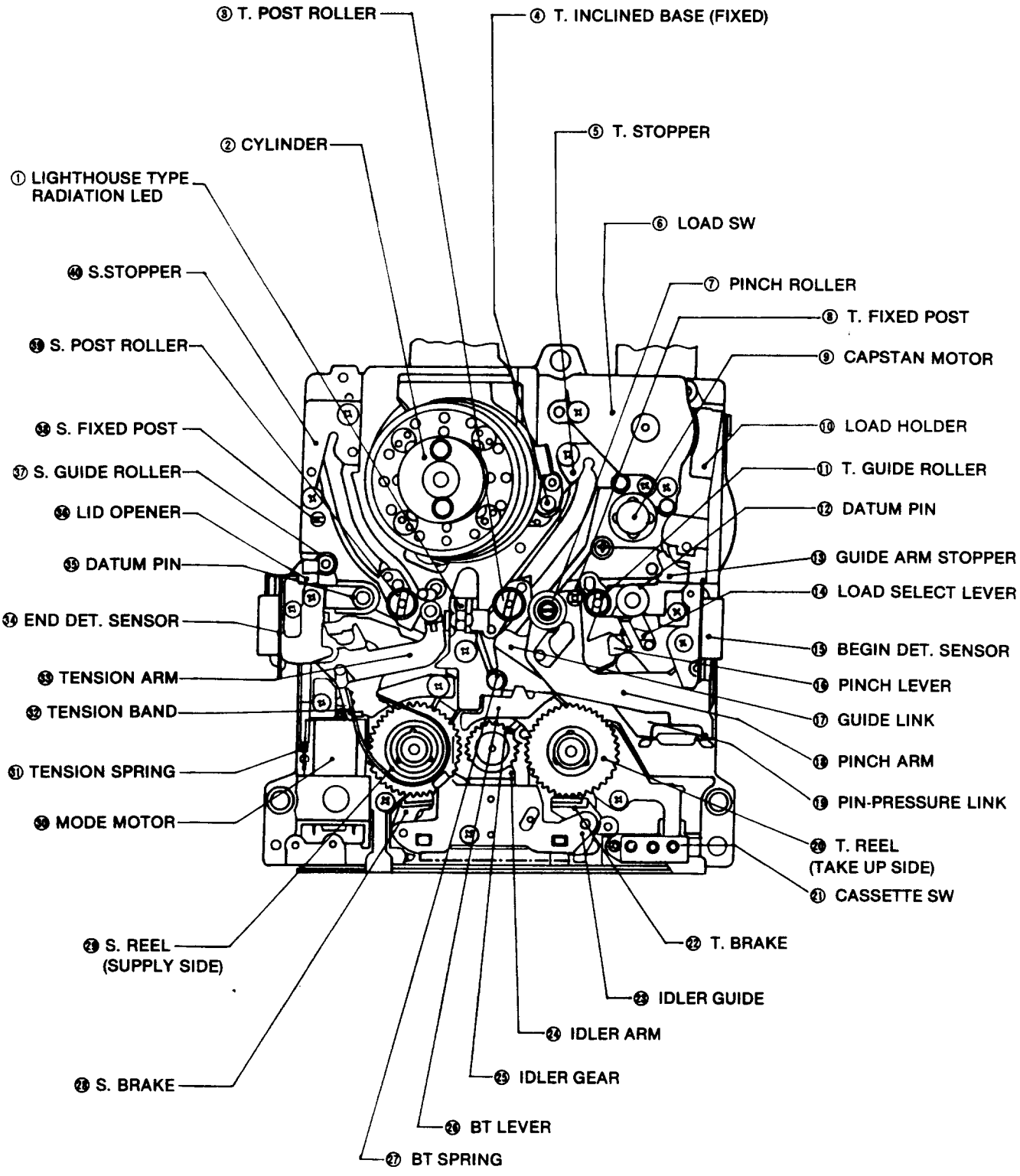


Be sure not to touch the head part.

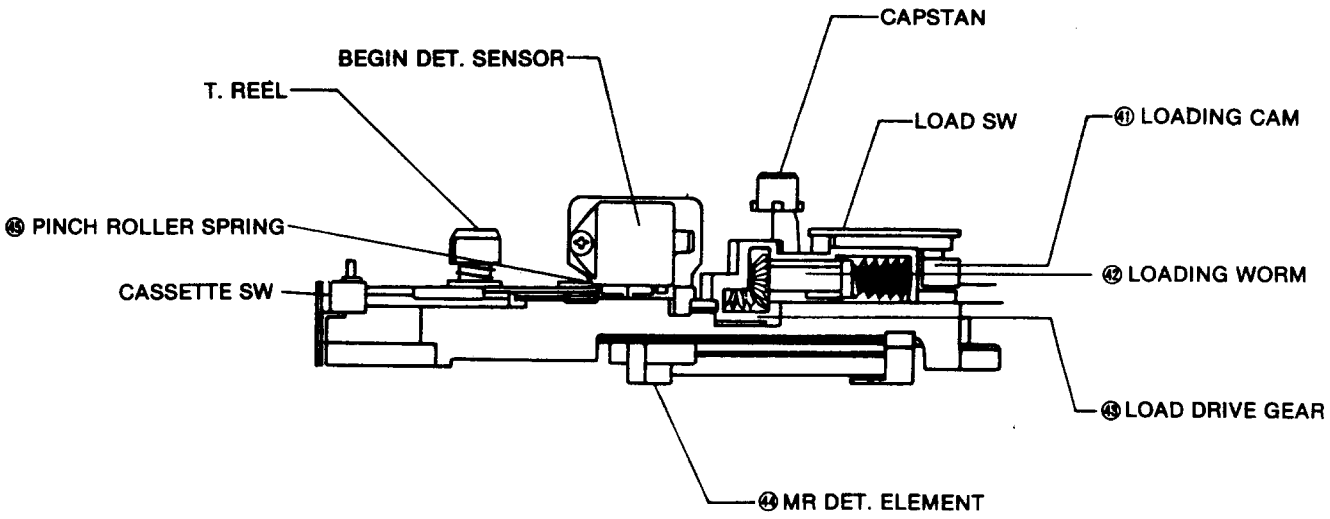
* When reassembling the cylinder (head), be sure that the direction is correct. (If it is assembled in the wrong direction, the left and right channels will be reversed during recording and playback.)

• MECHANISM COMPONENT LAYOUT

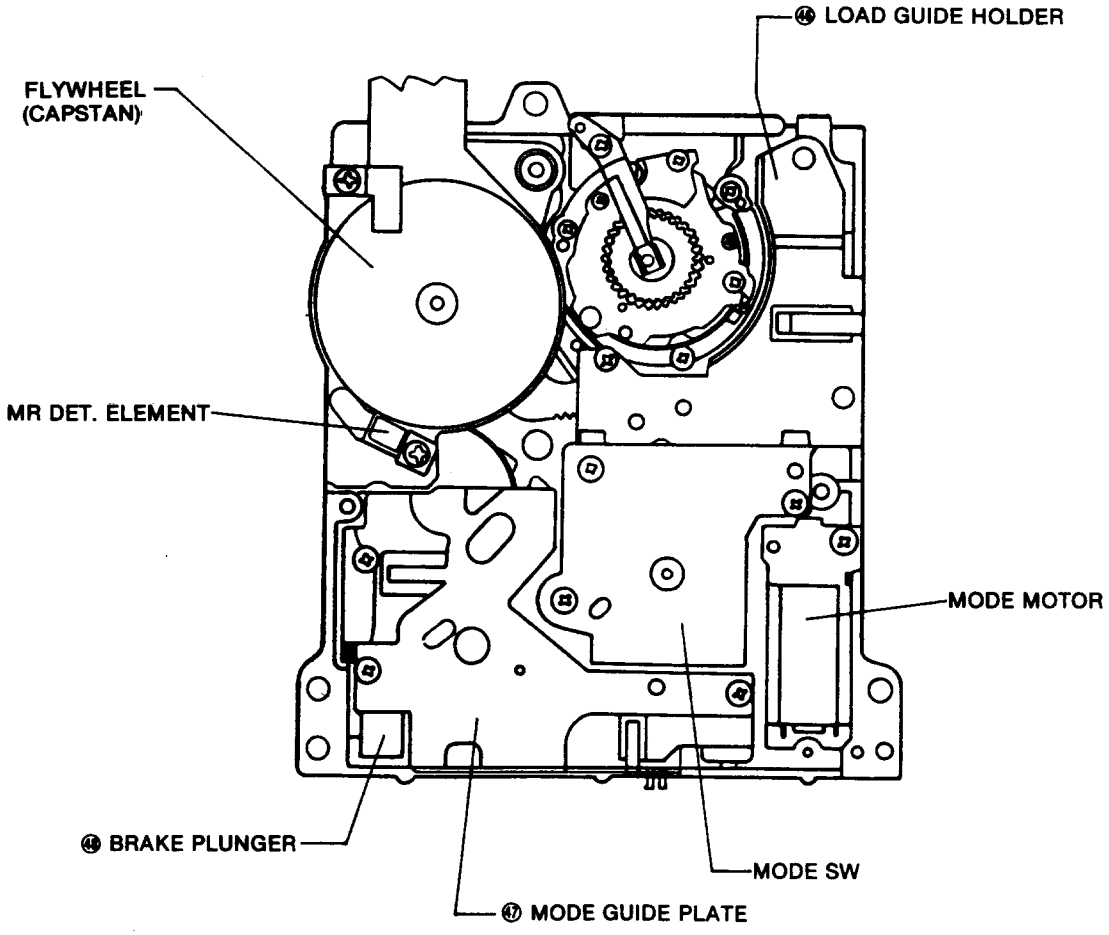
• Top view



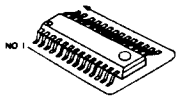
• **Side view**



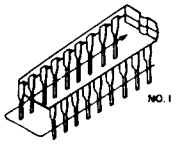
• **Bottom view**



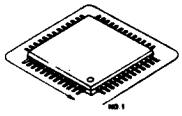
■TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES



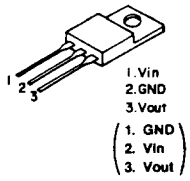
TC4S81FTX	5 pin	AN6607NSE2 MN74HC253S	16 pin
AN1339SE2 MN74HC04S MN74HC04SE2 M5228FPE2 MN74HCU04S MN4066BS-T2 MN74HC00S	14 pin	AN6873S	18 pin
		SRM20256LM10	28 pin
		AN7035SCE2	32 pin
		MN6460 AN7030SE2	42 pin
AN3841SR	24 pin		



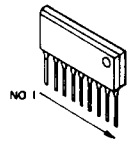
TC74HCU04AP	14 pin
MN188161SDS4	64 pin



MN6470	42 pin
AN8320NFA	48 pin
MN6742SDR MN17541SDN2	64 pin
M50754-165FP	72 pin
MN53020SDQ	44 pin
MN6624	124 pin

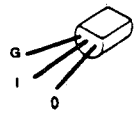


AN7812F AN7805F (AN79M20F) M5F78M12L723 (M5F79M12L723)	3 pin

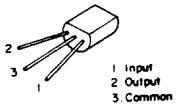


M5218AL M5219L M5220L M5238L	8 pin
TA7291S	9 pin

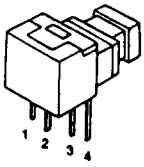
AN79L20



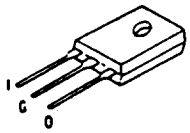
MN1281R-TA



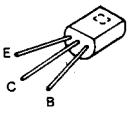
TORX174-A
TOTX174-A

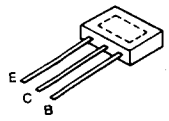


AN78N05

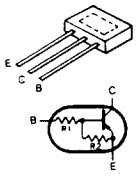


2SC1047DTA

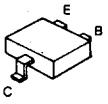




2SA1309STA
2SA1309QRSTA
2SC3311QRSTA
2SC3315CTA
2SD1450RSTTA

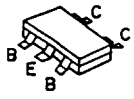


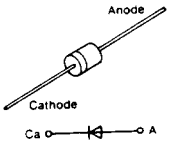
UN4124TA
UN4112TA
UN4111TA



DTB113ZKTW
DTA114EKTW
2SB709RTW
2SC3937TW
UN5216TW
DTA123JKTW
DTC124EKTW

XN1112TW
XN1212TW





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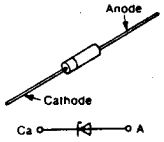
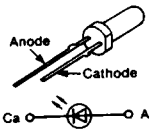
SVDS2V20
1N4606TR
1S2473TR

MA4051TA
MA4033MTA

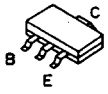




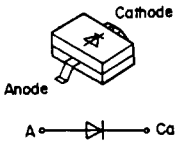
LN28RCPP-JF
LN31GPH-JF2
LN49YPH-JF1
LN29RPH-JF1

AN78L05ME2

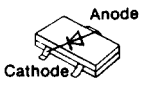
2SB956RTW
2SD1280STW



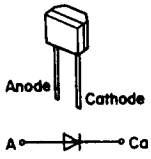
MA701TW



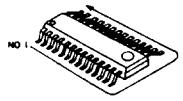
MA151ATW



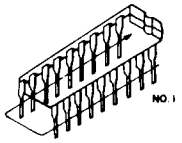
RVDSVC321



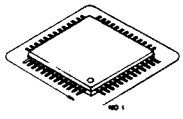
■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES



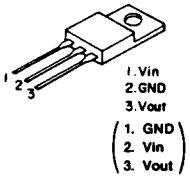
TC4S81FTX	5 pin	AN6607NSE2 MN74HC253S	16 pin
AN1339SE2 MN74HC04S MN74HC04SE2 M5228FPE2 MN74HCU04S MN4066BS-T2 MN74HC00S	14 pin	AN6873S	18 pin
		SRM20256LM10	28 pin
		AN7035SCE2	32 pin
		MN6460 AN7030SE2	42 pin
AN3841SR	24 pin		



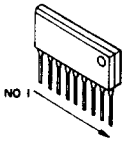
TC74HCU04AP	14 pin
MN188161SDS4	64 pin



MN6470	42 pin
AN8320NFA	48 pin
MN6742SDR MN17541SDN2	64 pin
M50754-165FP	72 pin
MN53020SDQ	44 pin
MN6624	124 pin

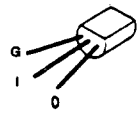


AN7812F AN7805F (AN79M20F) M5F78M12L723 (M5F79M12L723)	3 pin

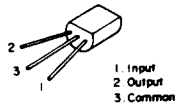


M5218AL M5219L M5220L M5238L	8 pin
TA7291S	9 pin

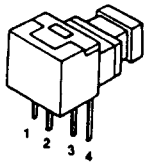
AN79L20



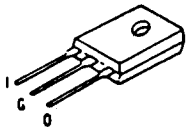
MN1281R-TA



TORX174-A
TOTX174-A



AN78N05



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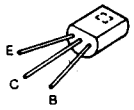
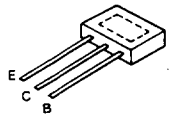
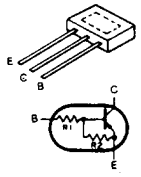
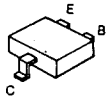




2SA1309STA
2SA1309QRSTA
2SC3311QRSTA
2SC3315CTA
2SD1450RSTTA

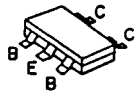


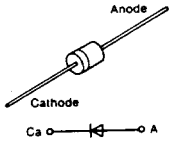
UN4124TA
UN4112TA
UN4111TA



DTB113ZKTW
DTA114EKTW
2SB709RTW
2SC3937TW
UN5216TW
DTA123JKTW
DTC124EKTW

XN1112TW
XN1212TW





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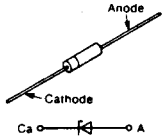
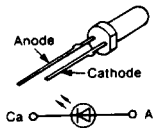
SVDS2V20
1N4606TR
1S2473TR

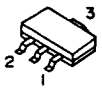
MA4051TA
MA4033MTA



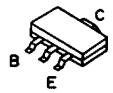


LN28RCPP-JF
LN31GPH-JF2
LN49YPH-JF1
LN29RPH-JF1

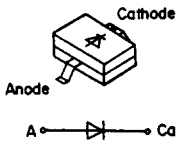
AN78L05ME2



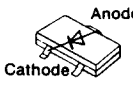
2SB956RTW
2SD1280STW



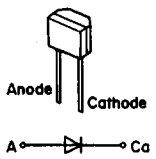
MA701TW



MA151ATW



RVDSVC321



■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with development of new technology.)

Note 1:

- S701 : Tape hole detection switch.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
  1K=1,000 (Ω), 1M=1,000k (Ω)
- Capacity are in micro-farads (μF) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  ( ).....Voltage values at recording mode.
  For measurement us EVM.
- Important safety notice
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

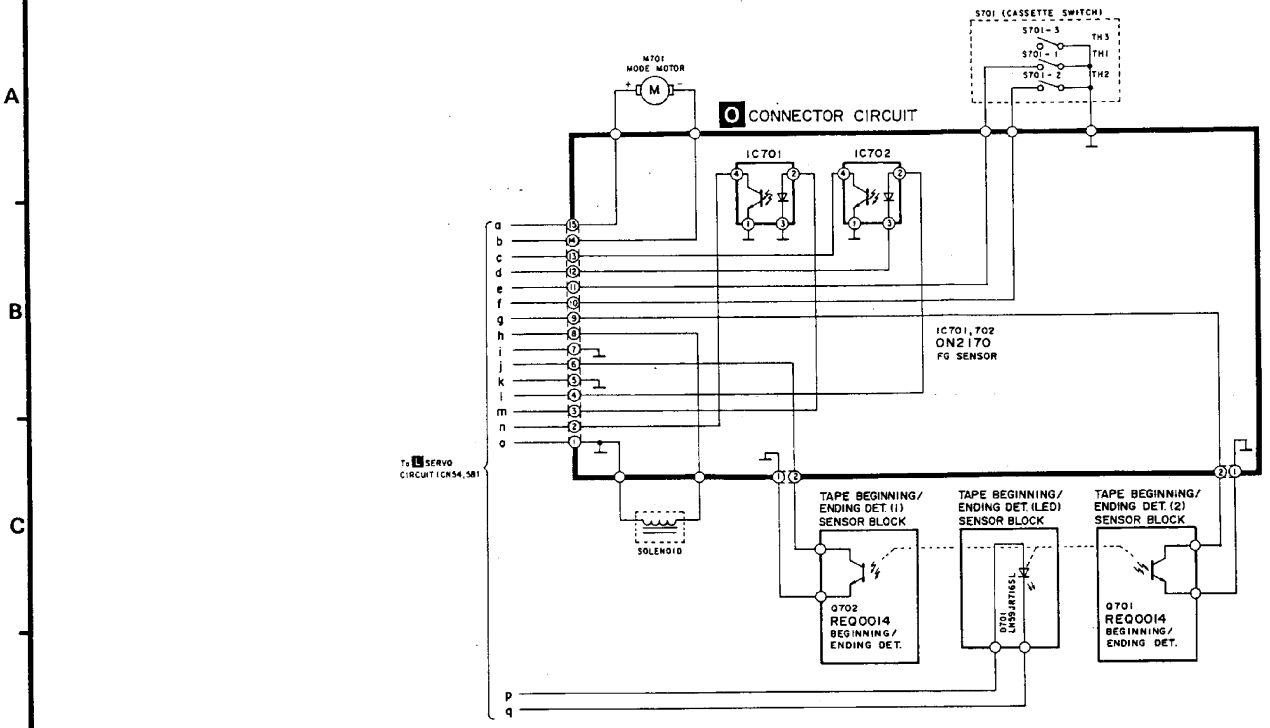
Part No.	Original Part No.	Supply Part No.
IC551, 552	M5218AL	M5218L

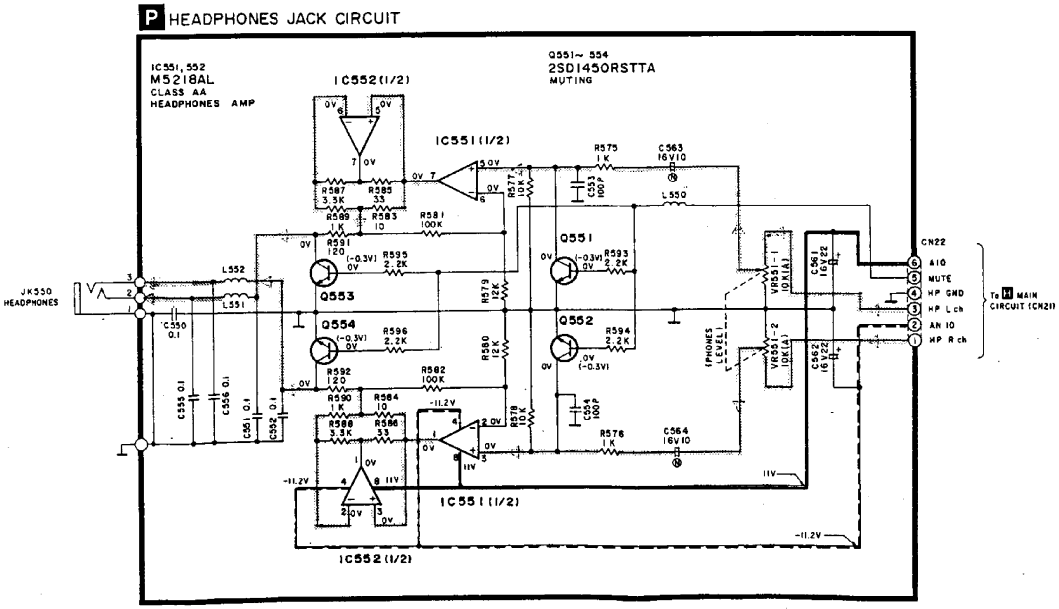
- (———) indicates +B (bias).
- (- - -) indicates −B (bias).
- (▒▒▒) indicates the flow of the playback signal.
- (⟹) indicates the flow of the recording signal.

*** Caution!**

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

* Cover the parts boxes made of plastics with aluminum foil.
* Ground the soldering iron.
* Put a conductive mat on the work table.
* Do not touch the legs of IC or LSI with the fingers directly.

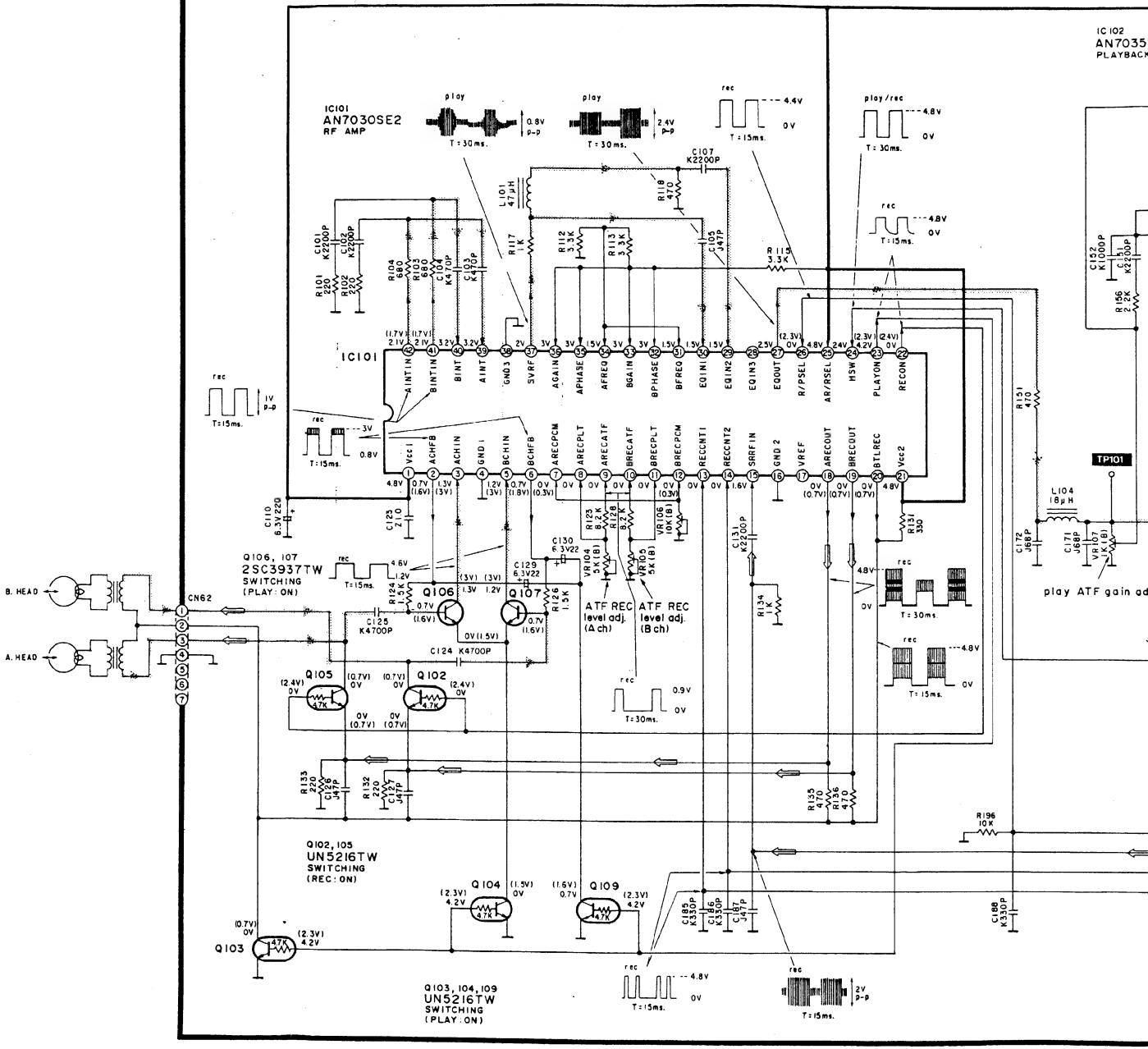




Note 3:

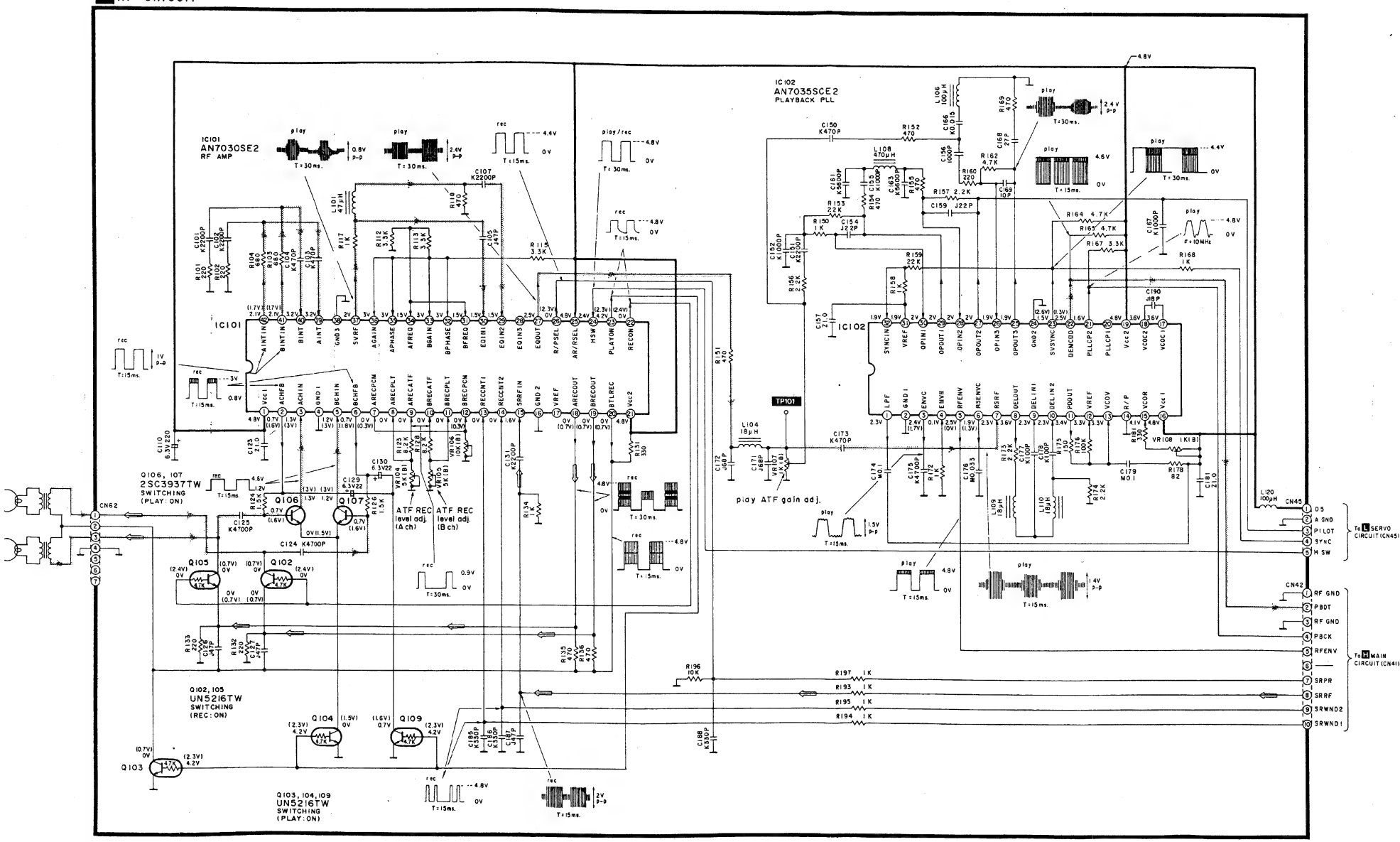
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  ( ).....Voltage values at recording mode.
  For measurement us EVM.
- Important safety notice
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- (———) indicates +B (bias).
- (- - -) indicates −B (bias).
- (⟿) indicates the flow of the playback signal.
- (⟹) indicates the flow of the recording signal.

K RF CIRCUIT



26 27 28 29 30 31 32 33 34 35 36

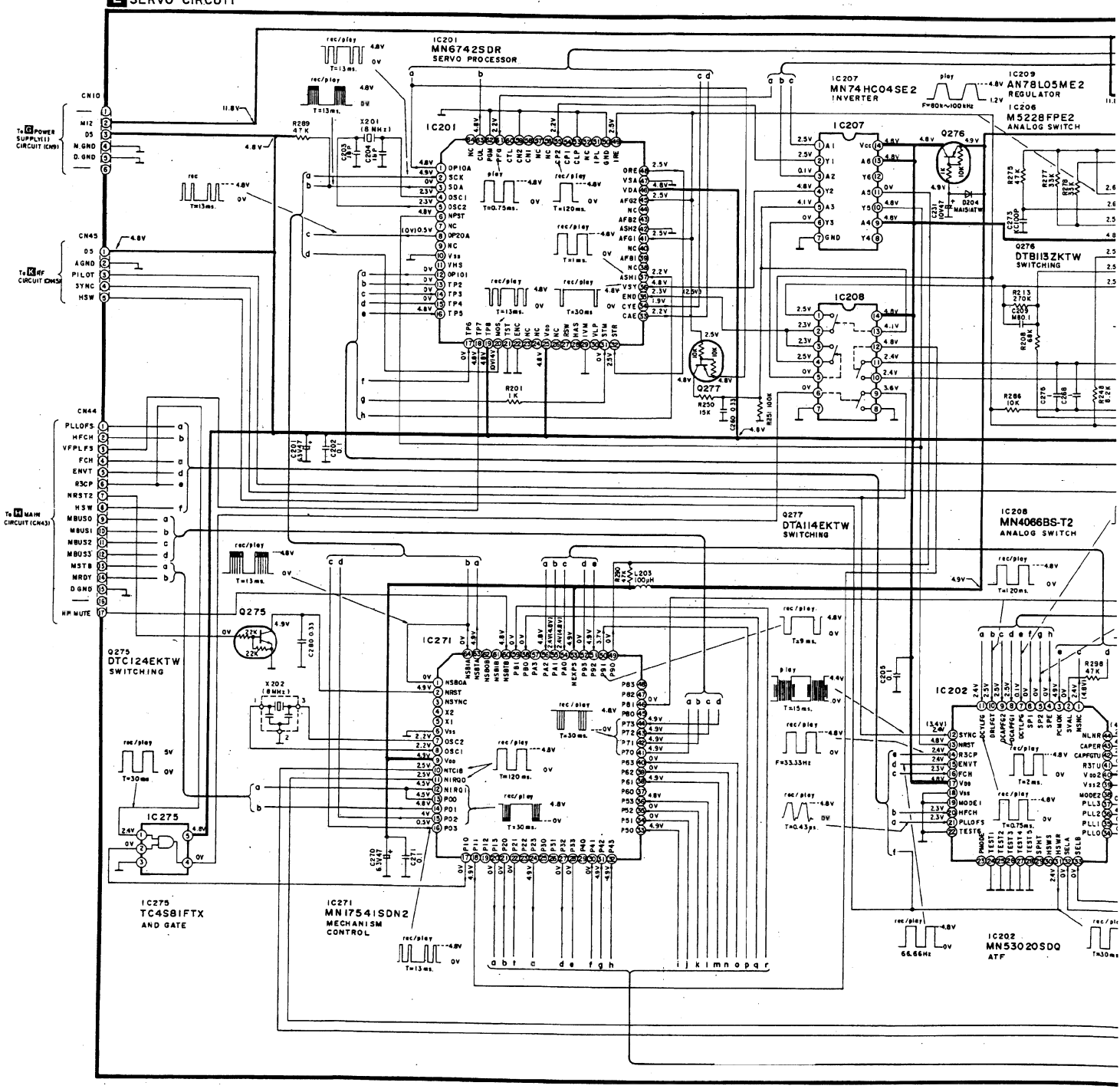
K RF CIRCUIT



Note 2:

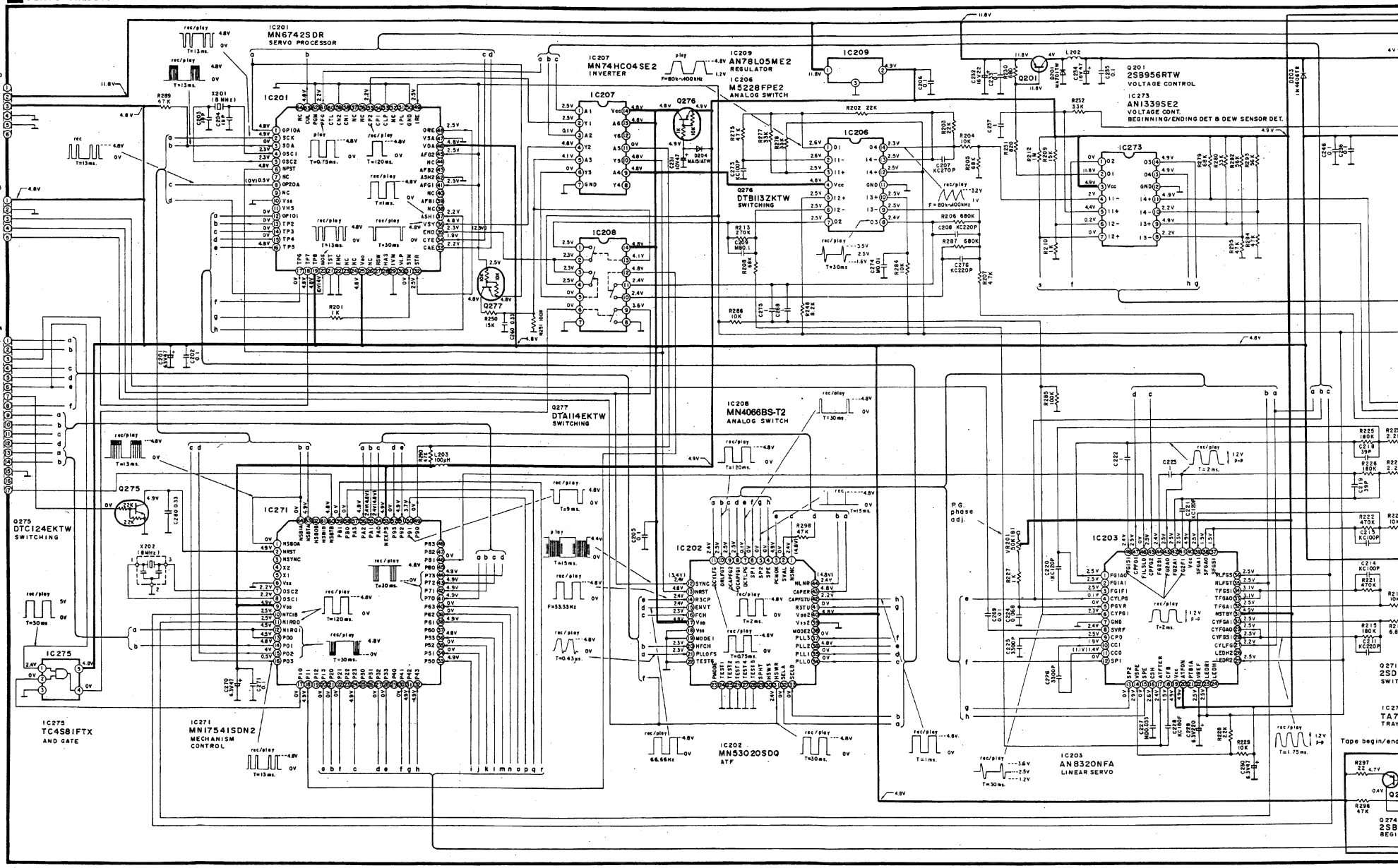
- **S702** : Loading detection switch.
- **S703** : Mode detection switch.
- **S751** : Cassette tray open detection switch.
- **S752** : Cassette tray close detection switch.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  ( ) ..... Voltage values at recording mode.
  For measurement us EVM.
- Important safety notice
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- (———) indicates +B (bias).
- (— — —) indicates −B (bias).
- (≈≈≈) indicates the flow of the playback signal.
- (⟹) indicates the flow of the recording signal.
- The "IC701, IC702, Q701, Q702, D701, MR701, L701~708, CAPH701~703, CYLH701~703" parts are not supplied separately and are thus not found on the replacement parts list.

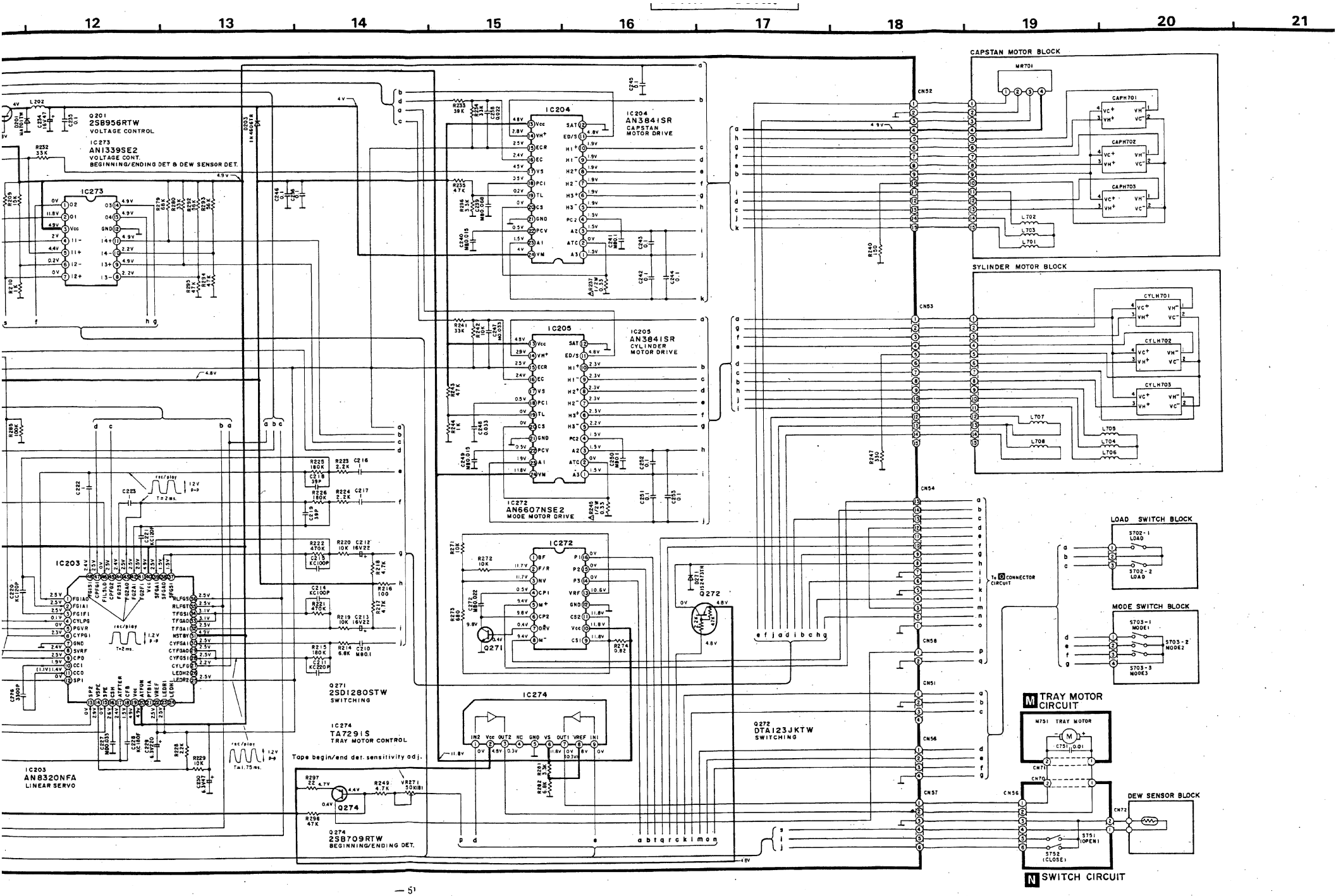
L SERVO CIRCUIT



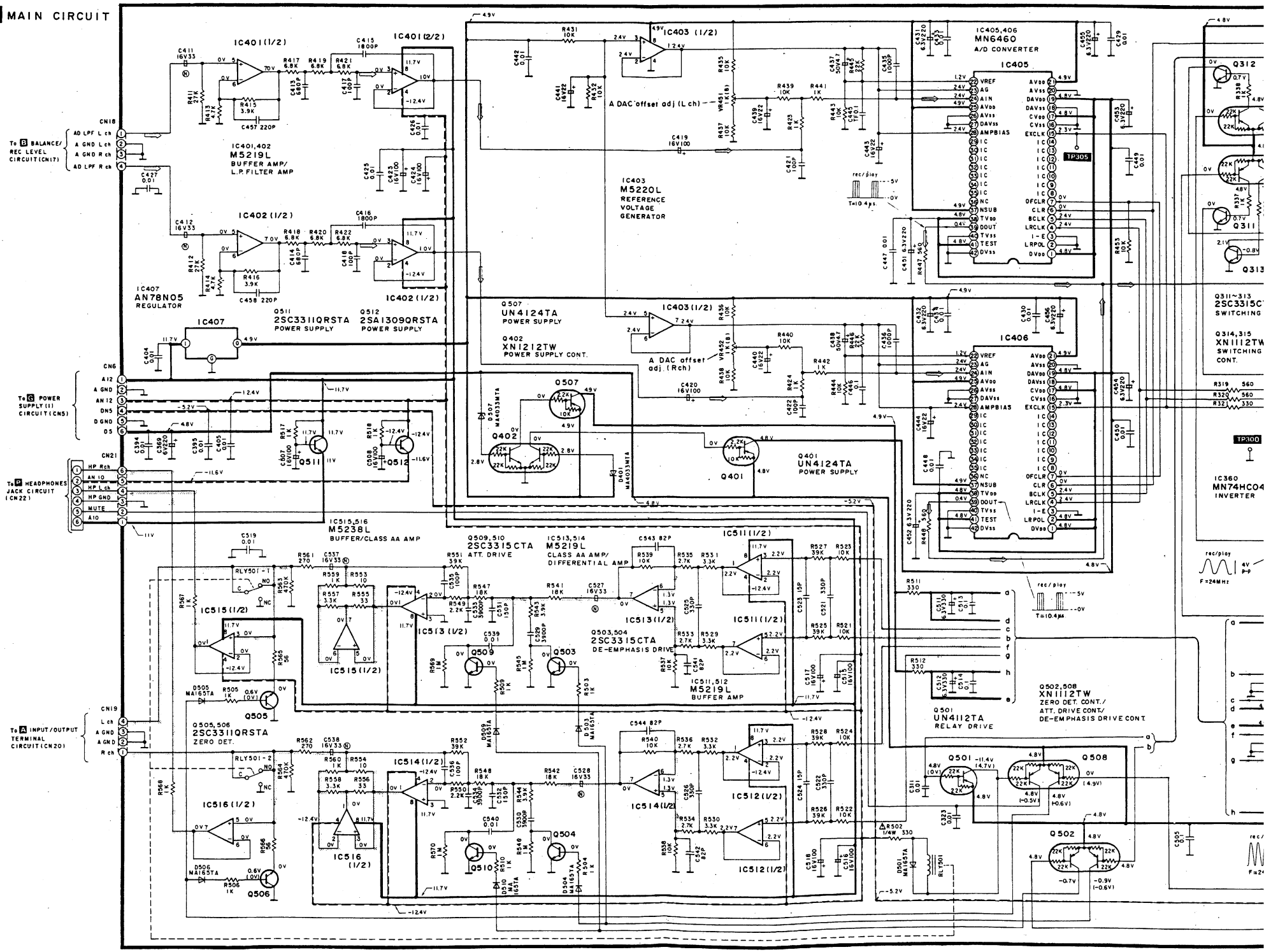
4 5 6 7 8 9 10 11 12 13

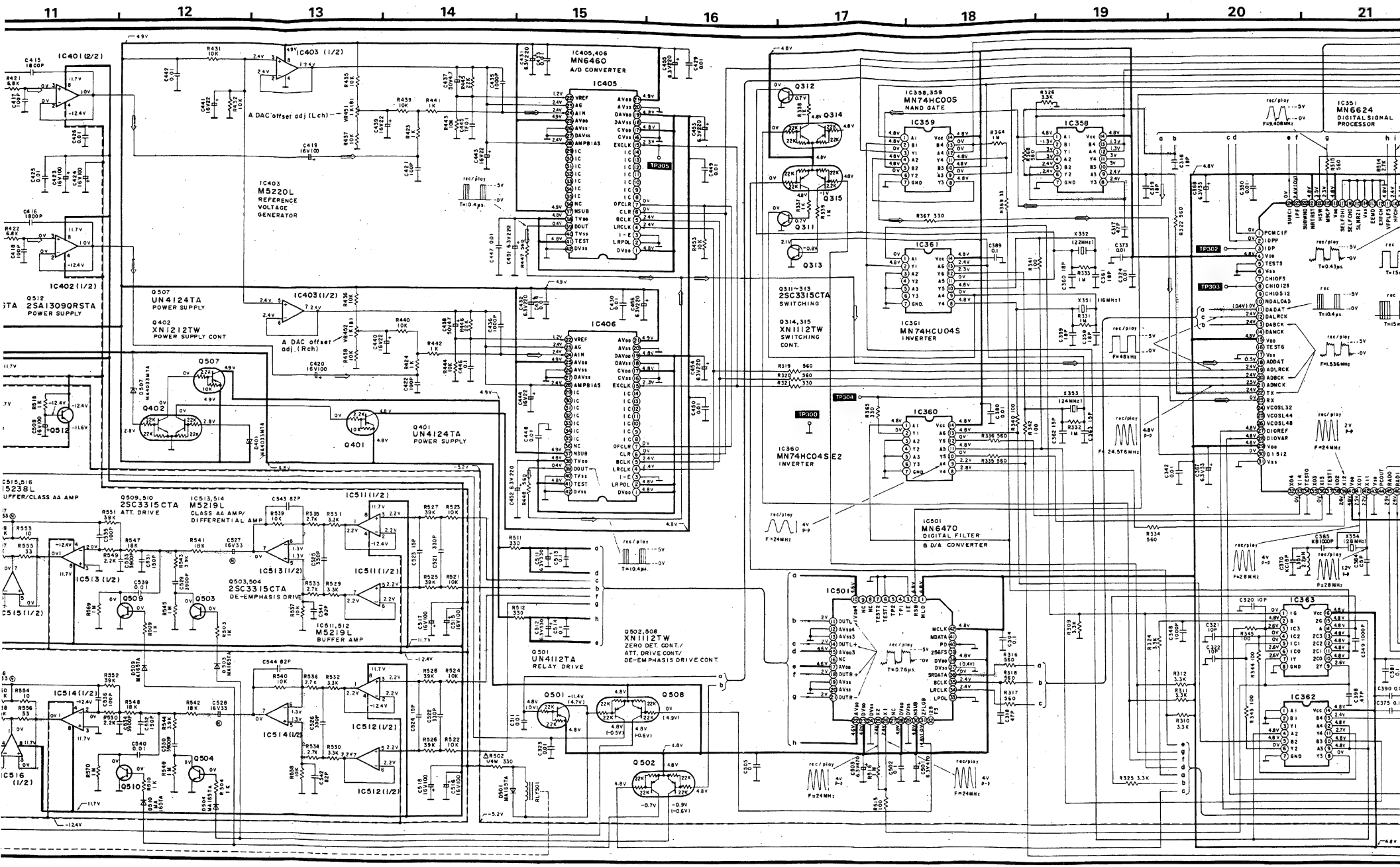
L SERVO CIRCUIT

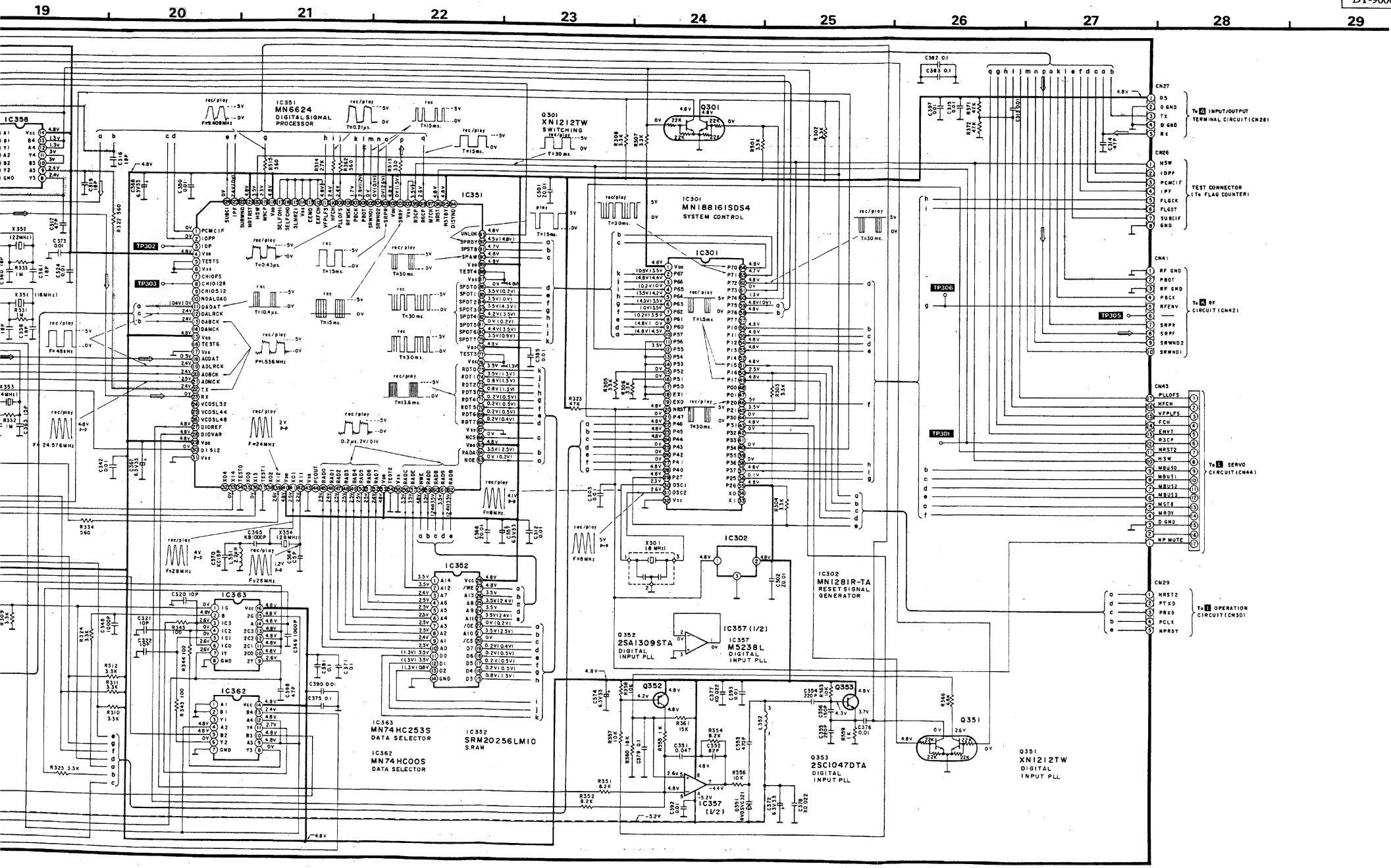



12
13
14
15
16
17
18
19
20
21
Q201
2SB956RTW
VOLTAGE CONTROL
IC273
AN1339SE2
VOLTAGE CONT.
BEGINNING/ENDING DET & DEW SENSOR DET.
IC204
AN3841SR
CAPSTAN
MOTOR DRIVE
IC205
AN3841SR
CYLINDER
MOTOR DRIVE
IC272
AN6607NSE2
MODE MOTOR DRIVE
IC203
AN8320NFA
LINEAR SERVO
Q271
2SD1280STW
SWITCHING
IC274
TA7291S
TRAY MOTOR CONTROL
Tape begin/end det. sensitivity adj.
Q274
2SB709RTW
BEGINNING/ENDING DET.
Q272
DTA123JKTW
SWITCHING
CAPSTAN MOTOR BLOCK
CYLINDER MOTOR BLOCK
LOAD SWITCH BLOCK
MODE SWITCH BLOCK
DEW SENSOR BLOCK
M TRAY MOTOR CIRCUIT
N SWITCH CIRCUIT
To ⓪ CONNECTOR CIRCUIT
CN52
CN53
CN54
CN58
CN51
CN56
CN57
MR701
CAPH701
CAPH702
CAPH703
CYLH701
CYLH702
CYLH703
M751 TRAY MOTOR
S751 (OPEN)
S752 (CLOSE)
S702-1 LOAD
S702-2 LOAD
S703-1 MODE1
S703-2 MODE2
S703-3 MODE3

H MAIN CIRCUIT




11
12
13
14
15
16
17
18
19
20
21
IC401 (2/2)
IC403 (1/2)
IC405,406
MN6460
A/D CONVERTER
IC405
IC403
M5220L
REFERENCE
VOLTAGE
GENERATOR
A DAC offset adj (Lch)
IC406
A DAC offset
adj. (Rch)
IC402 (1/2)
Q512
2SA1309ORSTA
POWER SUPPLY
Q507
UN4124TA
POWER SUPPLY
Q402
XN1212TW
POWER SUPPLY CONT
Q401
UN4124TA
POWER SUPPLY
IC358,359
MN74HC00S
NAND GATE
IC359
IC358
IC361
MN74HCU04S
INVERTER
Q311~313
2SC3315CTA
SWITCHING
Q314,315
XN1112TW
SWITCHING
CONT.
IC360
MN74HC04SE2
INVERTER
IC351
MN6624
DIGITAL SIGNAL
PROCESSOR
IC501
MN6470
DIGITAL FILTER
8 D/A CONVERTER
IC511(1/2)
IC513,514
M5219L
CLASS AA AMP/
DIFFERENTIAL AMP
IC513(1/2)
IC511(1/2)
IC511,512
M5219L
BUFFER AMP
IC514(1/2)
IC512(1/2)
IC516
(1/2)
Q509,510
2SC3315CTA
ATT. DRIVE
Q503,504
2SC3315CTA
DE-EMPHASIS DRIVE
Q501
UN4112TA
RELAY DRIVE
Q502,508
XN1112TW
ZERO DET. CONT./
ATT. DRIVE CONT/
DE-EMPHASIS DRIVE CONT
Q501
Q508
Q502
TP300
TP302
TP303
TP304
TP305
rec/play
T=10.4μs.
T=0.43μs.
T=0.76μs.
F=24MHz
F=28MHz
F=24.576MHz
F=48kHz
F=11.536MHz
Fs=408MHz
Fs=24MHz
Fs=28MHz
-11.7V
-12.4V
-5.2V
4.8V
4.9V


19
20
21
22
23
24
25
26
27
28
29
IC351
MN6624
DIGITAL SIGNAL PROCESSOR
IC301
MN188161SDS4
SYSTEM CONTROL
Q301
XN1212TW
SWITCHING
IC302
MN1281R-TA
RESET SIGNAL GENERATOR
IC352
SRM20256LM10
S-RAM
IC363
MN74HC253S
DATA SELECTOR
IC362
MN74HC00S
DATA SELECTOR
Q352
2SA1309STA
DIGITAL INPUT PLL
IC357 (1/2)
IC357
M5238L
DIGITAL INPUT PLL
Q353
2SC1047DTA
DIGITAL INPUT PLL
Q351
XN1212TW
DIGITAL INPUT PLL
CN27
To A INPUT/OUTPUT TERMINAL CIRCUIT (CN28)
CN26
TEST CONNECTOR (To FLAG COUNTER)
CN41
To K RF CIRCUIT (CN42)
CN43
To L SERVO CIRCUIT (CN44)
CN29
To I OPERATION CIRCUIT (CN30)
TP301
TP302
TP303
TP305
TP306

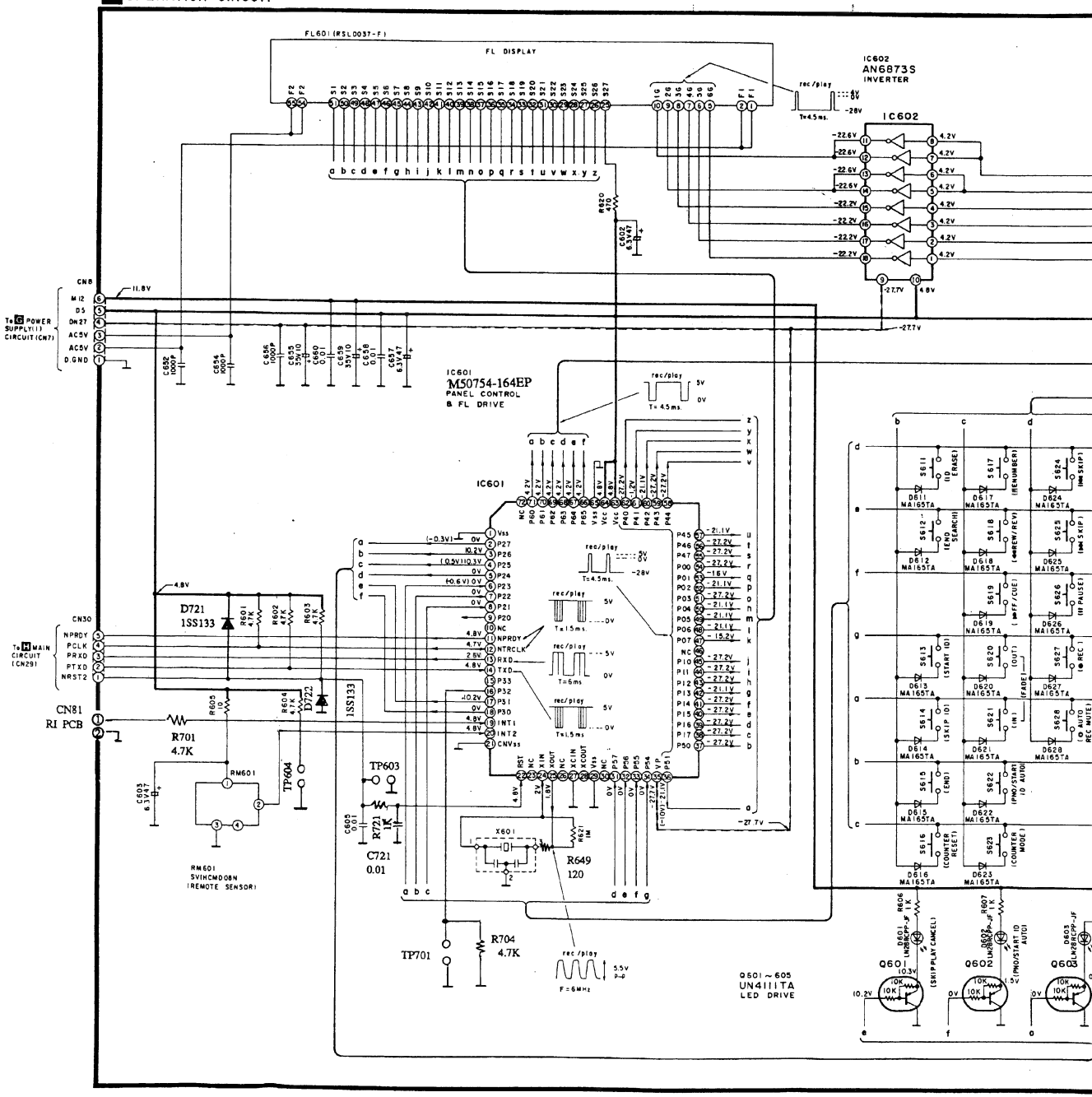
Note 4:

- **S1** : Power switch (POWER).
- **S381** : Digital input selector switch. (DIGITAL INPUT SELECTOR) (OPTICAL ↔ COAXIAL)
- **S601** : Timer switch (TIMER). (rec ↔ off ↔ play)
- **S602** : Input selector switch (INPUT) (▂ DIGITAL/▂ ANALOG).
- **S611** : ID erase switch (ID ERASE).
- **S612** : End search switch (END SEARCH).
- **S613** : Start ID switch (START ID).
- **S614** : Skip ID switch (SKIP ID).
- **S615** : End switch (END).
- **S616** : Counter reset switch (COUNTER RESET).
- **S617** : Renumber switch (RENUMBER).
- **S618** : Rew/rev switch (REW/REV).
- **S619** : FF/cue switch (FF/CUE).
- **S620** : Fade out switch (FADE OUT).
- **S621** : Fade in switch (FADE IN).
- **S622** : PNO/start ID auto switch (PNO/START ID AUTO).
- **S623** : Counter mode switch (COUNTER MODE).
- **S624, 625** : Skip switches (SKIP). [S624 I◀◀, S625 ▶▶I]
- **S626** : Pause switch (PAUSE).
- **S627** : Record switch (REC).
- **S628** : Auto rec mute switch (AUTO REC MUTE).
- **S630** : ID write switch (ID WRITE).
- **S631** : Play switch (PLAY).
- **S632** : Stop switch (STOP).
- **S633** : Skip play cancel switch (SKIP PLAY CANCEL).
- **S634** : Music scan switch (MUSIC SCAN).
- **S635** : Open/close switch (OPEN/CLOSE).

- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
- ( ) ..... Voltage values at recording mode. For measurement us EVM.
- Important safety notice

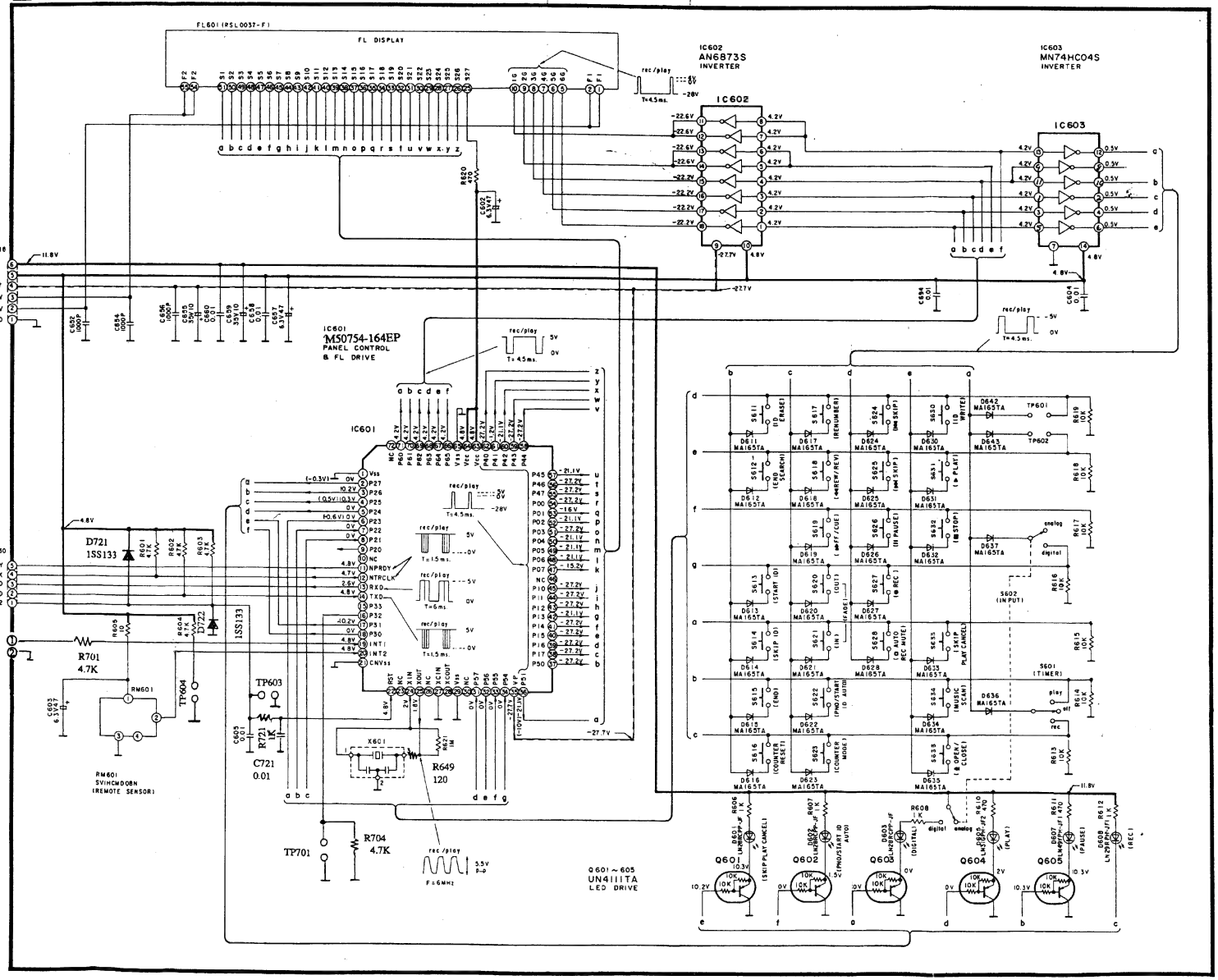
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- (———) indicates +B (bias).
- (▬ ▬ ▬) indicates −B (bias).
- (⋯⋯) indicates the flow of the playback signal.
- (⟹) indicates the flow of the recording signal.

I OPERATION CIRCUIT



5 6 7 8 9 10 11 12 13 14

I OPERATION CIRCUIT



CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE 500mA 125V FUSE.

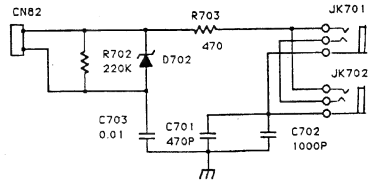
RISK OF FIRE-REPLACE FUSE AS MARKED.

FUSE CAUTION

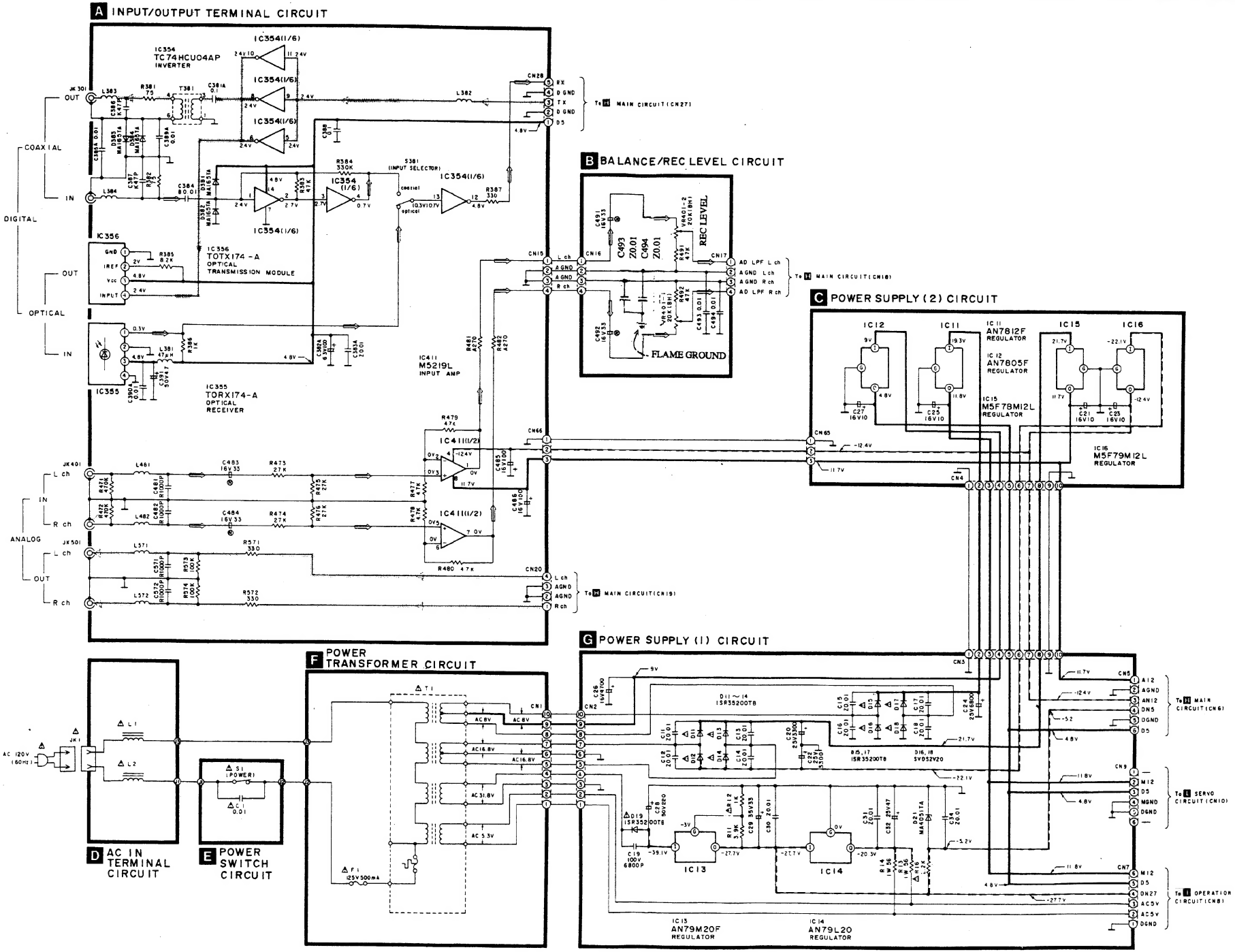
This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating, refer to the marking adjacent to the symbol.

Ce symbole indique que le fusible utilisé est à rapide. Pour une protection permanente, n' utiliser que des fusibles de même type. Ce dernier est indiqué là qù le présent symbole est apposé.

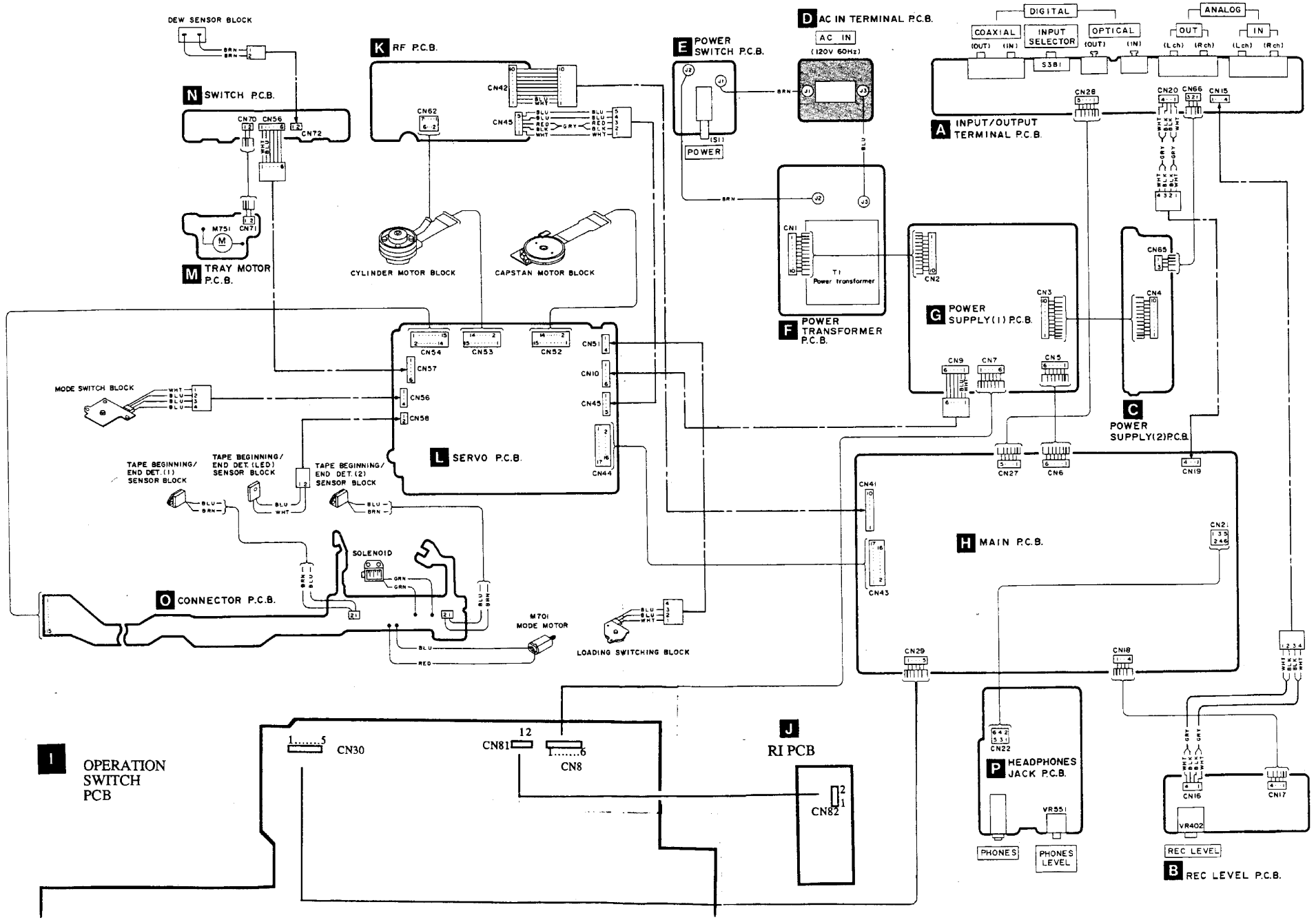
J RI CIRCUIT



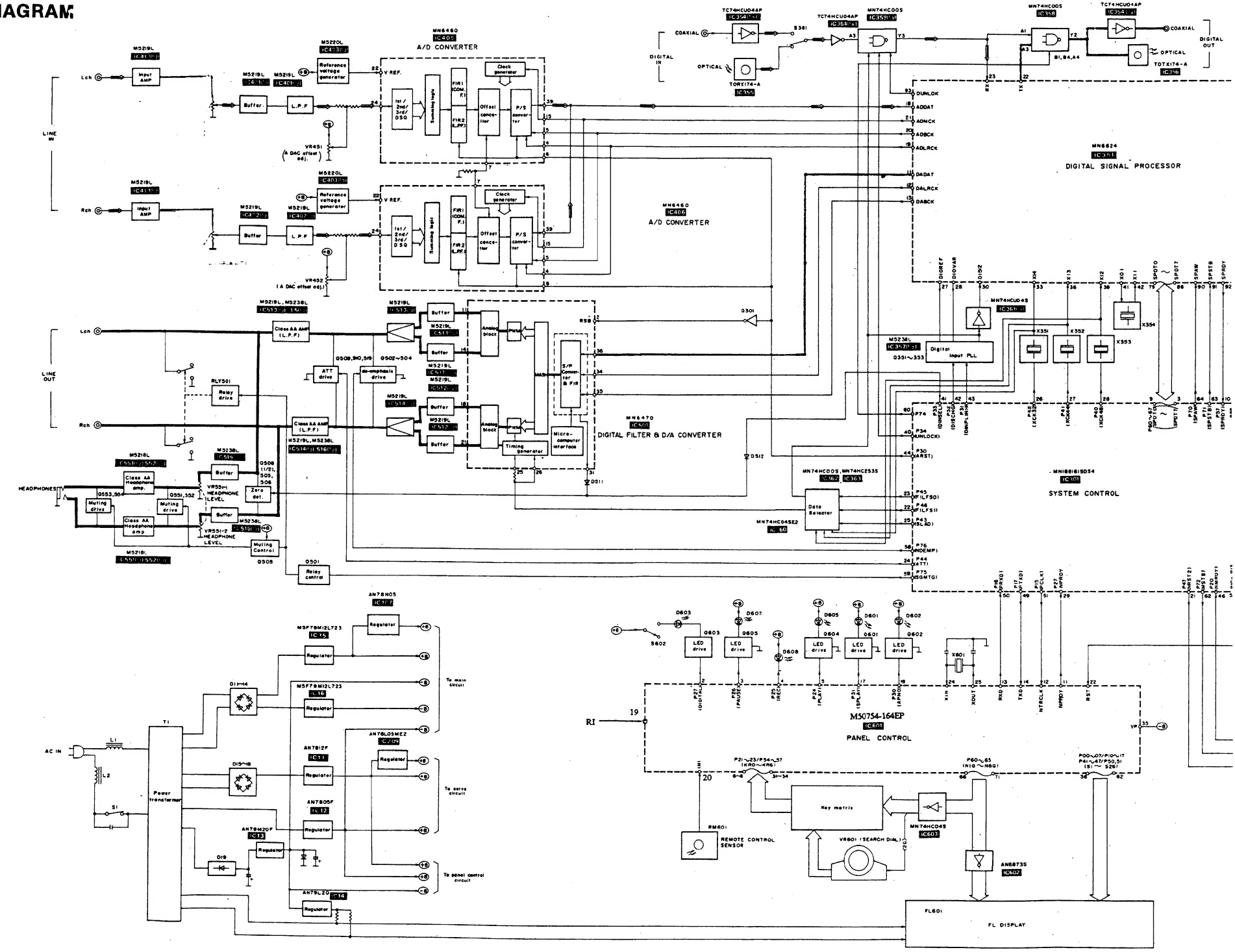
15 16 17 18 19 20 21 22 23 24

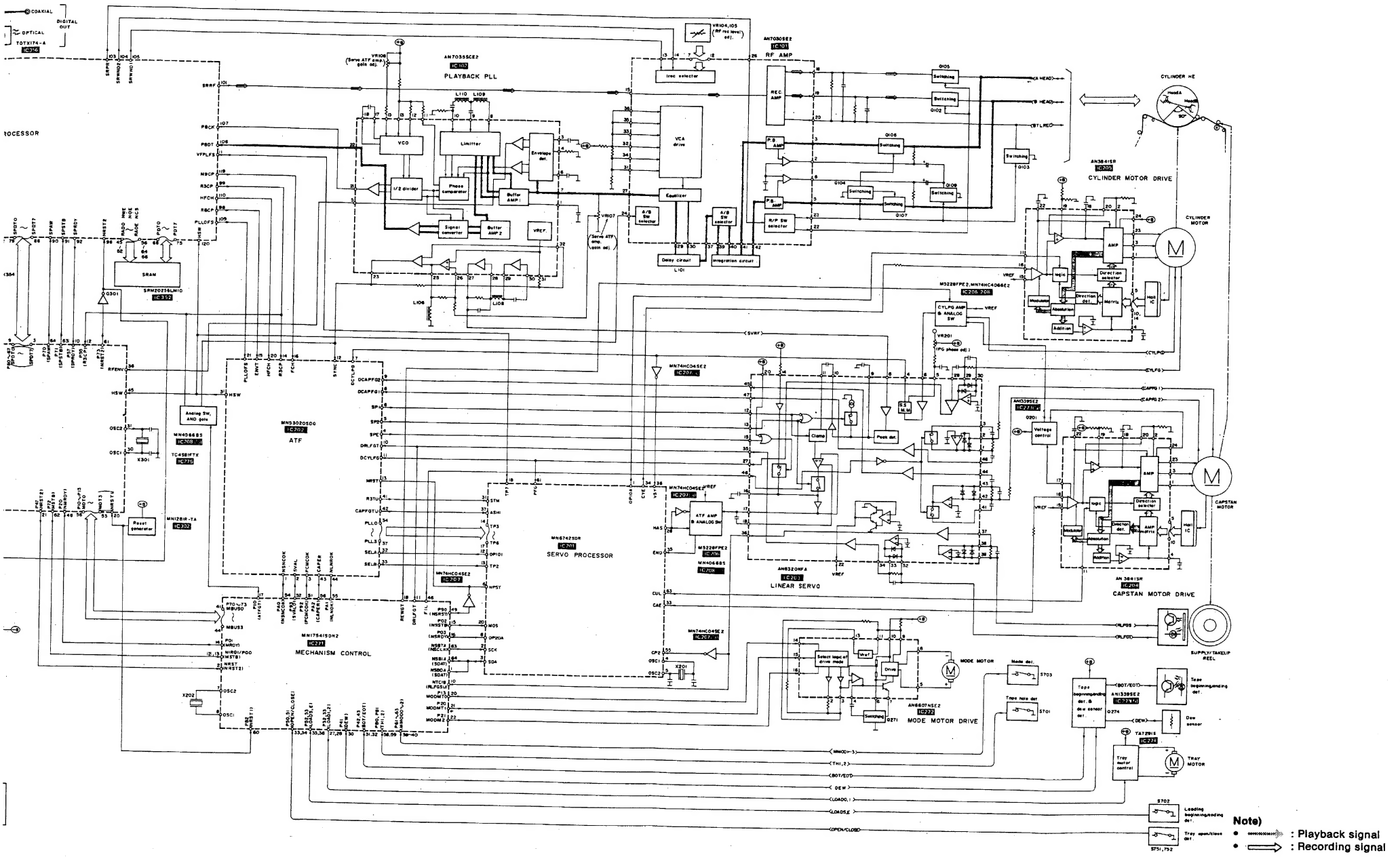


WIRING CONNECTION DIAGRAM



BLOCK DIAGRAM




PLAYBACK PLL
RF AMP
SERVO PROCESSOR
ATF
MECHANISM CONTROL
LINEAR SERVO
CYLINDER MOTOR DRIVE
CAPSTAN MOTOR DRIVE
MODE MOTOR DRIVE
CYLINDER MOTOR
CAPSTAN MOTOR
SUPPLY/TAKE-UP REEL
TRAY MOTOR
SRAM
Note)
: Playback signal
: Recording signal